EDISON ELECTRIC INSTITUTE BULLETIN

— CONVENTION NUMBER —

JUNE, 1937

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EDISON ELECTRIC INSTITUTE

STATISTICAL DATA OF THE ELECTRIC LIGHT AND POWER INDUSTRY

Compiled Monthly by the Edison Electric Institute—Covers 100% of the Industry

DURING THE MONTH OF MARCH

	1937	1936	%
Kilowatthours Generated* (net)			
By Fuel	6,040,477,000	4,843,259,000	+24.7
By Water Power	3,623,977,000	3,447,088,000	+ 5.1
Total Kilowatthours Generated	9,664,454,000	8,290,347,000	+16.6
Additions to Supply			
Energy Purchased from Other Sources	299,744,000	174,203,000	+72.1
Net International Imports	116,373,000	82,273,000	+14.1
Total	416,117,000	256,476,000	+62.2
Deductions from Supply			
Energy Used in Electric Railway Departments	46,680,000	52,792,000	−11.6
Energy Used in Electric and Other Departments	125,632,000	118,538,000	+ 6.0
Total	172,312,000	171,330,000	+ 0.6
Total Energy for Distribution	**9,908,259,000**	**8,375,493,000**	**+18.3**
Energy Lost in Transmission, Distribution, Etc.	**1,691,270,000**	**1,462,458,000**	**+15.6**
Kilowatthours Sold to Ultimate Consumers	**8,216,989,000**	**6,913,035,000**	**+18.9**
Sales to Ultimate Consumers (kwhrs)			
Domestic Service	1,425,199,000	1,253,769,000	+13.7
Commercial—Small Light and Power (Retail)	1,450,910,000	1,255,899,000	+15.5
Commercial—Large Light and Power (Wholesale)	4,553,055,000	3,648,576,000	+24.8
Municipal Street Lighting	180,761,000	209,448,000	−13.7
Railroads—Street and Interurban	414,452,000	393,720,000	+ 5.3
Railroads—Electrified Steam	120,050,000	83,098,000	+14.4
Municipal and Miscellaneous	72,562,000	68,525,000	+ 5.9
Total Sales to Ultimate Consumers	8,216,989,000	6,913,035,000	+18.9
Total Revenue from Ultimate Consumers	$177,579,300	$165,650,200	+ 7.2

DURING TWELVE MONTHS ENDING MARCH 31st

Kilowatthours Generated* (net)			
By Fuel	70,836,807,000	58,707,946,000	+20.7
By Water Power	38,295,277,000	36,688,370,000	+ 4.4
Total Kilowatthours Generated	109,132,084,000	95,396,316,000	+11.4
Purchased Energy (net)	3,430,734,000	3,235,446,000	+ 6.0
Energy Used in Electric Railway and Other Departments	2,101,319,000	2,182,291,000	− 3.7
Total Energy for Distribution	**110,461,499,000**	**96,449,471,000**	**+11.5**
Energy Lost in Transmission, Distribution, Etc.	**17,602,504,000**	**16,406,841,000**	**+ 7.3**
Kilowatthours Sold to Ultimate Consumers	**92,858,995,000**	**80,042,630,000**	**+16.0**
Total Revenue from Ultimate Consumers	**$2,098,009,400**	**$1,939,543,800**	**+ 8.2**
Important Factors			
Percent of Energy Generated by Waterpower	35.1%	38.5%	
Domestic Service (Residential Use)			
Average Annual Consumption per Customer (kwhr)	743	688	+ 8.0
Average Revenue per Kwhr (Cents)	4.63¢	4.93¢	− 6.1
Average Monthly Bill per Domestic Customer	$2.87	$2.83	+ 1.4

BASIC INFORMATION AS OF MARCH 31st

Generating Capacity (kw)—Steam	24,080,600	23,990,800	
—Waterpower	9,509,700	9,007,900	
—Internal Combustion	616,500	497,400	
Total Generating Capacity in Kilowatts	34,206,800	33,496,100	
Number of Customers			
Farms in Eastern Area (Included with Domestic)	(801,911)	(582,468)	
Farms in Western Area (Included with Commercial—Large)	(287,670)	(217,784)	
Domestic Service	21,865,890	21,115,849	
Commercial—Small Light and Power	3,829,722	3,740,755	
Commercial—Large Light and Power	559,054	487,689	
Other Ultimate Consumers	70,839	65,232	
Total Ultimate Consumers	26,325,505	25,409,525	

* By courtesy of the Federal Power Commission, with deductions for certain plants not considered electric light and power enterprises.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 5 JUNE, 1937 No. 6

The Institute's Fifth Annual Convention

Best Attended, Most Successful in Institute's History

CHICAGO produced its very best brand of June weather and the finest of hospitality for the fifth annual meeting and convention of the Institute. The Institute responded with a record attendance, a program which set new standards of excellence for such gatherings, and some two dozen addresses and papers of high calibre.

Activity was by no means confined to the convention floor. Important meetings of the Board of Trustees and of various committees took place during the week. The President's Reception and the Institute's annual banquet were high spots of the lighter part of the program. Special events conducted for the wives of visiting delegates added to the pleasure of the feminine side of the Institute.

Utility executives were present from all sections of the country, with large delegations from the East as well as from the areas around Chicago. Attendance exceeded 1,500, the largest in the Institute's history.

The speakers, in substance and as a whole, conducted a searching examination of the electric utility industry. In spite of the activities of governmental and semi-official agencies, a broad spirit of optimism and courage for the future of the industry was apparent on all sides. In the discussions of rural electrification, interconnection, government control and many other phases of the industry the evidence submitted provides sound foundation for the utilities' determination to continue with confidence along its path of constant effort toward serving more people, serving them better, and serving them at constantly decreasing rates.

Commercial problems of the industry were discussed from many angles—progress toward the completely electrified home, what the housewife expects from electric service, air conditioning, better light as a factor in health, selling and servicing costs. Activities and progress in the electrical manufacturing field were described and discussed in four excellent addresses. Opportunities for youth in the utility field, liberalism and the electric industry, and the ever-important subject of safety were other topics capably handled by the speakers.

OFFICERS OF THE INSTITUTE 1937-1938

President, C. W. KELLOGG, Chairman, Engineers Public Service Company, New York, N. Y.

Vice-President, JAMES E. DAVIDSON, President of the Nebraska Power Company, Omaha, Neb.

Vice-President, PAUL M. DOWNING, Vice-President of the Pacific Gas and Electric Company, San Francisco, Cal.

Vice-President, A. H. KEHOE, Vice-President, Consolidated Edison Company, Inc., New York, N. Y.

Vice-President, WM. E. MITCHELL, Vice-President, Georgia Power Company, Atlanta, Ga.

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Assistant Managing Director, H. S. BENNION, 420 Lexington Avenue, New York, N. Y.

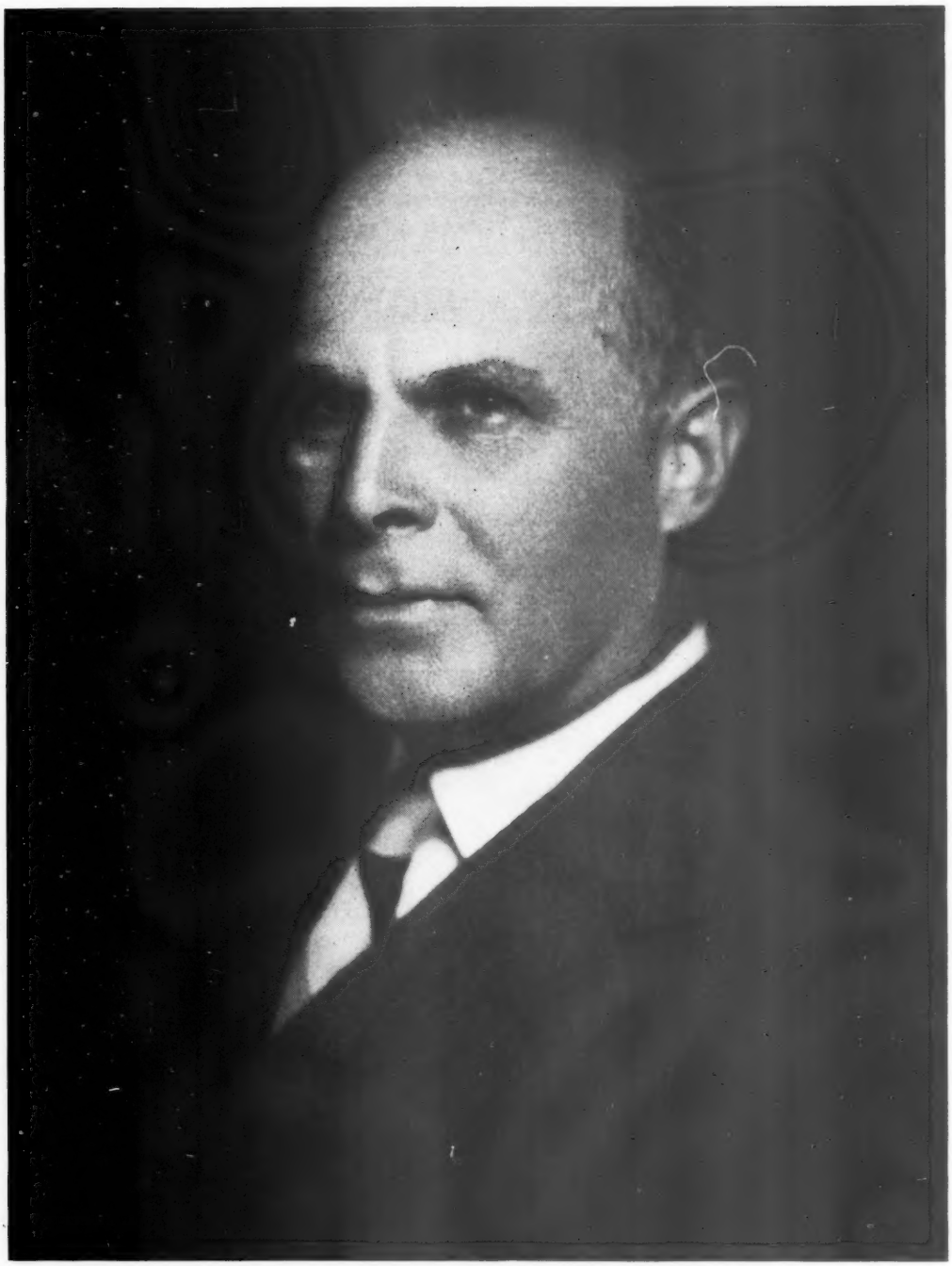
Secretary, MAE B. WOODS, 420 Lexington Avenue, New York, N. Y.

No detail that could contribute in the slightest degree to the comfort and enjoyment of convention visitors was overlooked by the Chicago Reception Committee and the Committee on Arrangements. The hospitality extended by the representatives of the local utility companies was of the kind which causes pleasant memories of the convention to remain even after the business matters of the meeting have disappeared into the distant past. Edward J. Doyle, President of Commonwealth Edison Company, and John F. Gilchrist, Vice-President of the same company, as Chairman and Vice-Chairman of the Reception Committee, were everywhere at once, and were ably supported by a staff of young men and women from the Chicago utilities who performed many important functions necessary for a well organized convention.

Charles W. Kellogg, Chairman of the Board of the Engineers Public Service Company, who has served the Institute so successfully and constructively as its President during the past year, was reelected for another term. William E. Mitchell, Georgia Power Company, Atlanta, Georgia, was elected a Vice-President, to succeed J. G. Holtzclaw of Virginia Electric and Power Company, Richmond, Virginia. Other officers were reelected for the ensuing year.

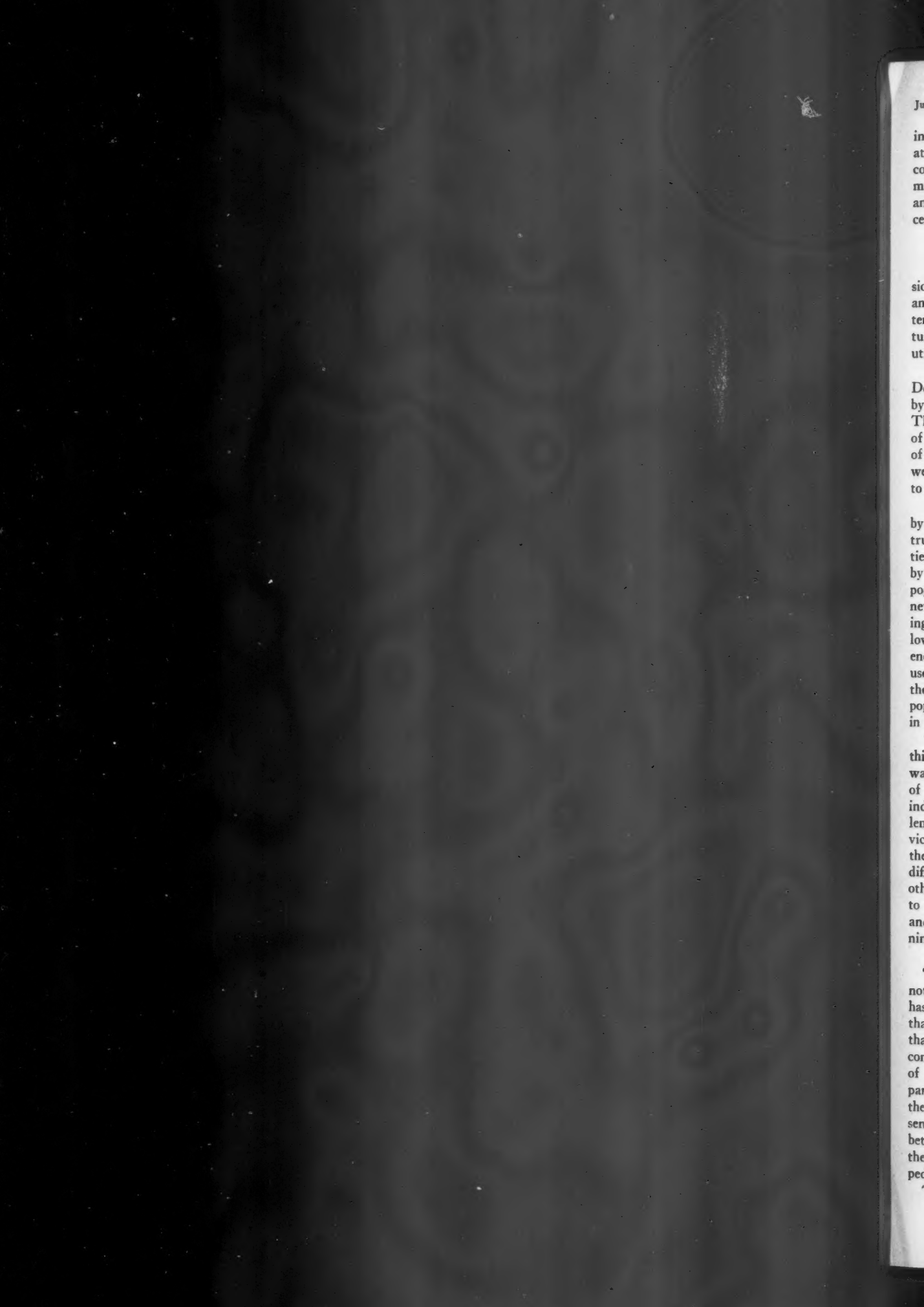
Oscar W. Fogg, Consolidated Edison Company of New York, was elected to the Board of Trustees for the term ending in 1940. Floyd L. Carlisle, William Chamberlain, Harvey C. Couch, Louis H. Egan, Philip G. Gossler, W. H. Taylor, George N. Tidd and John E. Zimmermann, whose terms as trustees expire this year, were all reelected to serve until 1940.

All sessions of the convention, includ-



CHARLES W. KELLOGG

Re-elected to the presidency of the Edison Electric Institute



ing the committee meetings, were held at the Palmer House, which served as convention headquarters. The hotel management gave excellent cooperation, and contributed no small part to the success of the week.

FIRST SESSION

President Kellogg opened the first session at 2.30 o'clock Tuesday afternoon and first presented Mr. Doyle, who extended Chicago's welcome to the Institute and the greetings of the Chicago utility companies.

In welcoming the delegates Mr. Doyle said, "The work that will be done by the convention will be worth while. The word convention, itself, is, I think, of more than ordinary significance to all of us, because as servants of the public we have far more than an ordinary urge to exchange ideas freely and frequently.

"We are confronted almost constantly by technical problems. This has been true throughout the years, but difficulties have increased rather than lessened, by the growth of suburban areas and populations. There is now before us, as never before, the necessity of load-building, not only to overcome the effect of lower rates by the use of more electrical energy, but also to bring about a wider use of our product as a contribution to the comfort and convenience of the vast populations it is our privilege to serve in an age of modernization.

"If it can be truthfully said—and I think it may—that our industry has always had to face more than its fair share of problems, it is equally true that no industry has consistently turned problems into opportunities for greater service. With us, necessity has truly been the mother of invention. It would be difficult, perhaps impossible, to find another industry adaptable in so many ways to the changing demands of the times, and it has been so from our very beginning.

"The Edison Electric Institute does not need to be told what our progress has been. It has played a large part in that progress. It needs no reminder that its assemblage, to say nothing of its continuous activities, should be a source of inspiration to all the member companies, but it will not be amiss to say the best minds of the industry, as represented in this convention, could do no better than to give a large measure of their thought to sales facts and sales expedients."

The other speakers at this session were Walter A. Forbush, Edison Illuminating Company of Brockton, Massachusetts; Dr. Morris Fishbein, editor of *The Journal of the American Medical Association,* of Chicago; Miss Nancy Finch, Utah Power and Light Company, Salt Lake City, and Earle W. Gray, Oklahoma Gas and Electric Company, Oklahoma City, Oklahoma. Mr. Gray's address on Conditioned Air is published in full in this issue. Mr. Forbush's paper, entitled "Progress Toward Electric Homes in Conservative New England," Dr. Fishbein's paper on Education and Light, and Miss Finch's discussion of "What Women Can Do to Increase the Use of Electric Service" will appear in the next issue.

Mr. Forbush described six factors primarily responsible for the rapid electrification of homes in his area. These six factors, he explained, are those which are bringing customers of his company to an acceptance of present-day standards of "electrical living."

Most important of these are the community friendliness and belief in the honesty and sincerity of the company which have developed during the years since it was established. Next in importance he placed the company's employees, personally convinced of the soundness of the story they are telling and ready to do all in their power to have permanently satisfied customers. The company uses a plan whereby a district representative takes care of most company contacts with a group of perhaps a thousand customers, reading meters, servicing appliances, selling and collecting. These representatives know their territories thoroughly, serve the customers to the utmost and have their full confidence.

In order to gain the cooperation of local dealers, the company organized the Brockton Electric Club, which functions successfully in formulating policies and sponsoring joint activities, and in eliminating complaints and dissatisfaction. A fourth factor in the company's program has been the development of a sound promotional rate structure and a tradition of voluntary rate reductions as soon as economically possible.

The fifth and sixth factors, Mr. Forbush explained, cover selling plans and policies. The company has developed a selling program that builds from the ground up, and does not neglect the minor appliances which build interest in and desire for larger equipment. The sales effort is continuous, and employs all sound methods, such as special campaigns, contests, prizes for employees, trial rentals, three months' free trial of new equipment as a trade-in allowance on old equipment, and other liberal arrangements for the benefit of customers, and a persistent and continuous campaign of advertising backing up these activities.

A continuance of these efforts, Mr. Forbush believes, "will eventually establish true electric homes with all that they mean in New England."

Miss Finch, who is Director of the Home Service Department of her company, made it clear to her male listeners that it takes a woman to understand a woman's problems.

The woman with problems, Miss Finch explained, is the housewife. The task of the Home Service woman of the utility companies is to show the housewife how "electrical living" can solve so many of the problems of housekeeping. In general, she appreciates the interest of women in what electricity can do for them much beter than a mere man, who is always inclined to talk in terms of details of construction and material and such things in which the average woman has little interest.

She can discuss the service which the housewife should get from her various appliances, correct mistakes in operating practice, and educate to new uses. She can sell the housewife small, and even large, equipment in circumstances which might escape the notice of the company salesman, arouse her interest in new equipment as cultivation toward later sales, and make sure that she gains the full efficiency of her equipment after she has purchased it.

Thus the woman who combines the knowledge of the home economist with an understanding of the many uses of electricity in the home and an ability to sell appliances can make an important contribution to increased business for the utility companies in building a domestic load.

Dr. Fishbein discussed the importance of proper lighting as an aid to vision and health, from the medical point of view.

"Fundamental as light actually is to satisfactory living, it is only recently that scientists have given the subject the serious study necessary to determine definitely the relationship of light to the saving of vision and to health," he said.

Ability to see, Dr. Fishbein pointed out, depends on illumination, the size of the object we look at, the amount of contrast between the object and the sur-

roundings, the direction of the light, and the time during which vision is possible. It does not require a lighting engineer to prove these facts, but the lighting engineer can learn a lot more about vision and the doctor can learn a lot more about light and illumination before we can give to human beings all that we can give them to be of help in saving their eyes.

"Every situation may raise a special lighting problem. There is a vast difference between lighting a surgical operating room and a dining room, between lighting a living room and a library. The light that enables us to see seven spades in a bridge hand may not be right for shaving.

"The American Medical Association attempts to improve the hygiene of the eye through its Bureau of Health and Public Instruction." Dr. Fishbein said. "There is also the National Association for the Prevention of Blindness. None of these organizations has, however, concerned itself particularly with the question of the relationship of adequate illumination to adequate vision. For this reason the effective Better Light-Better Sight program now carried on nationally is the more commendable."

The American Medical Association is contemplating the publication of a series of articles dealing with the relationship of light to vision, Dr. Fishbein reported. It is necessary to extend this information to the many millions of people who might be reached through newspapers, magazines and radio. "In this plan of cooperation, the American medical profession recognizes its obligation to conduct the necessary research to establish the facts and to act as a body sitting in judgment on research emanating from commercial sources. Such cooperation carried to its ultimate end must inevitably bring vast good for millions of people."

SECOND SESSION

James E. Davidson, Vice-President of the Institute, presided at the second session, which opened Wednesday morning at 9.30 o'clock. Speakers were Philip Sporn, American Gas and Electric Company, New York; C. E. Wilson, General Electric Company, Bridgeport, Connecticut; H. P. Liversidge, Philadelphia Electric Company, Philadelphia, Pennsylvania; N. G. Symonds, Westinghouse Electric and Manufacturing Company, Pittsburgh, Pennsylvania, and E. T. Gushee, The Detroit Edison Company, Detroit, Michigan. All of these papers with the exception of that by Mr. Liversidge are reproduced in this issue. Mr. Liversidge's address, on "Opportunities for Youth in the Electric Utility Industry," will appear next month, and the BULLETIN's readers may rest assured that it will deserve their special attention at that time.

OSCAR W. FOGG
Newly Elected Trustee of the Institute

Problems which confront the utility industry today present a challenge to the ingenuity of youth, Mr. Liversidge declared. "History shows that most progress has been made by young men tackling the 'unsolvable' problems and licking them," he added.

Factors which make it attractive to young men, he said, include the industry's relative youth and the basic character of its service. The opportunities still ahead for increasing the efficiency of power generation and distribution in the technical side of the industry, and of its sales, merchandising and advertising programs, are proving definitely attractive to young men of character, vision and energy.

While the industry is frequently considered as primarily a field for the engineer, it also offers opportunity to the accountant, the man with legal training, salesmen, advertising men, typists, clerks, stenographers, bookkeepers, carpenters, pipe fitters, welders, linemen, mechanics, metermen, switchboard operators, lighting experts and home economists, and personnel workers. "We must make sure that the younger generation discards the erroneous belief that the electrical industry promises a future only to the technically-trained man," he said.

"In recent years we have witnessed a growing recognition of the importance of men with the ability to deal with people. Engineers as well as others in supervisory positions must have a knowledge of human nature, understanding of and sympathy for people, a sense of justice and fair play, and a loyalty to the men working with them. Such an outlook is particularly necessary in the electric utility industry, because it is built not merely to create new technique but to serve large masses of people who are dependent on it for their welfare and comfort.

"The electrical industry offers rewards that cannot be measured in terms of dollars. The very nature of its business, a public service supplying basic needs of humankind, presents opportunities that bring their own rewards. In my opinion, the young man with such ideals will find more rapid progress awaiting him in this field of endeavor than in any other line of business I know," Mr. Liversidge concluded.

THIRD SESSION

The third session opened immediately after lunch on Wednesday, with J. G. Holtzclaw, Vice-President of the Institute, presiding. The speakers were J. F. Porter, Jr., Kansas City Power and Light Company, Kansas City, Missouri; Bernard F. Weadock, Managing Director of the Institute; R. E. Fisher, Pacific Gas and Electric Company, San Francisco, and Dr. L. W. Chubb, Director of Research Laboratories, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania. The concluding feature of the session was a motion picture presented by General Electric Company, which illustrated the "Electrical Standard of Living" in dramatic and entertaining manner.

Mr. Weadock's timely discussion of the "Fourth Branch" of the Government is contained elsewhere in this issue. Dr. Chubb's paper on "New Products from Research in the Electrical Industry" accompanied a demonstration of electric air cleaning and polyphase light. Mr. Porter discussed Selling, and Mr. Fisher the "Cost of Servicing Appliances." These three papers will be published in the July issue of the BULLETIN.

The air cleaner operates on the principle of electrostatic precipitation, Dr. Chubb explained, and can remove from the air particles as fine as cigarette smoke which are too small to be removed by any mechanical filter.

"Filtering, in the sense of providing

pores so small that fine smoke cannot pass through," Dr. Chubb said, "is impracticable because such pores do not pass sufficient air. Centrifugal devices are ineffective in removing fine particles because they travel with the air to such an extent that only a small percentage of the fine dirt is caught.

"When charged with 10 electrons, the forces of attraction in an electric field may easily be made a million times as great as the gravitational force alone which nature uses to settle particles out of the air. Electrostatic precipitation consists essentially of imparting a charge (of electricity) to each dust particle and then attracting the particle out of the air.

"This precipitator is particularly adapted for use where the air is subsequently to be breathed by the occupants of a room. However, we have found it applicable to many industrial processes. In many cases of asthma and hay fever, patients have obtained complete relief while they remain in the room where the air is electrostatically cleaned."

The second research product which Dr. Chubb explained he designated as "polyphase light," which he believes suggests many possibilities in the lighting field, especially for decorative and colored window displays, talking signs or advertising devices. It is based on the use of polarized light or several components of polarized light of different colors. Of particular interest in this demonstration was its application to automobile lighting. It allows an ample illumination of the road for driving, and at the same time eliminates all glare from approaching headlights.

By the use of various screens of colored cellophane, varied color effects were achieved merely by moving the screens, and Dr. Chubb expressed the belief that considerable use may be made of this method of using light, particularly for interesting and mysterious window displays.

The impression which the general public has of large corporations is frequently determined by the act of an individual employee of that corporation, Mr. Porter pointed out. A tremendous percentage of the public forms its impression of the utility company from the meter reader or some other employee of minor rank. To the public, this employee is the company, and his attitude and character are accepted and believed as being that of the company itself.

To overcome troubles of this nature, Mr. Porter recommended a course of "public relations" training for all employees to make them realize that they are a part of the company and to enable them to understand the benefits of the company's policies and operations. When every representative of the company is sales minded and able to talk as the company's salesman, its public relations are bound to improve.

Mr. Fisher outlined the growth of the servicing problem from the days when the electric refrigerator first came into general use. At that time, he pointed out, manufacturers had no servicing organizations to keep refrigerators in operation once they were installed, and it became necessary for the utility companies to do this servicing in order to maintain the load. Thus the public became accustomed to look to the utility company for this type of servicing, although at a later date the manufacturers and distributors worked out capable service organizations to handle it.

With other domestic appliances, the situation has been repeated. The utilities in many places find themselves virtually forced to take care of servicing problems by the demands of their customers, since the distributors are not as yet equipped to handle this work. In other communities, the utilities do no servicing, leaving it all to the dealers, or else take care of it on annual servicing contracts.

The item of cost in servicing which Mr. Fisher's company has found to be most burdensome is the labor involved in the field. Recent analysis of the company's records indicates that this cost amounts to 67 per cent of the total servicing cost, while transportation amounted to 18 per cent, and material and supplies to 15 per cent.

It is Mr. Fisher's belief that the utility companies, manufacturers and dealers should share equally in the cost of ser-servicing. Each has a definite interest having it done promptly and efficiently. A plan which his company is now working out requires the dealers to maintain the appliances they sell during the first year, replacing parts in accordance with the manufacturer's guarantee. If the dealer cannot give sufficiently prompt service, the utility makes the repairs for the dealer on a time and material basis.

FOURTH SESSION

A. H. Kehoe, Vice-President of the Institute, opened the fourth session of the convention on Thursday morning. Following the report of the Nominating Committee and the election of Trustees, the scheduled speakers were William E. Mitchell, Georgia Power Company, Atlanta; C. W. Kellogg, President of the Institute; W. C. Mullendore, Southern California Edison Company, Ltd., of Los Angeles, and D. E. Karn, Consumers Power Company, Jackson, Michigan. The addresses by Mr. Kellogg, Mr. Mitchell and Mr. Mullendore appear in this issue. Mr. Karn was unable to be present and his address was delivered in his absence by H. J. Gallagher of Consumers Power Company.

Mr. Gallagher, speaking for Mr. Karn, first outlined the advances which have been made in the rural electrification field, and then devoted himself to a discussion of important problems in rural electrification with which the utility companies are faced.

The rights of existing utilities to extend service into territory not now supplied is of mutual interest to most of the operating companies, and should be studied both from the legal and practical phases. The objective of such a study should be to determine a method of procedure for the utilities against attack or prohibition of rural extensions. Wholesale rates to cooperatives and the policies of operating companies with respect to their future programs should have careful analysis.

The purchasing power of farmers and the agricultural trends which influence purchasing power are so important to a sound rural electrification program that each operating company should have authentic information in this respect. Efforts of the Transmission and Distribution Committee should be continued toward the standardization of sturdy, low-cost lines.

The final problem to be solved is that of load building. Mr. Gallagher considers this more a problem of education than of merchandising, and recommends that cooperative activities of this nature be enlarged and extended.

FIFTH SESSION

The fifth and final session opened Friday morning, with President Kellogg presiding. Papers were delivered by R. C. Muir, General Electric Company, Schenectady, N. Y., and Dean John T. Madden, New York University. Wendell L. Willkie, President of The Commonwealth & Southern Corporation, then spoke extemporaneously after which came the awarding of prizes, as described elsewhere in this issue, the introduction of officers and adjournment.

"Our engineering objective is—in

A Section of the Grand Ball Room of the Palmer House During One of the Business Sessions

power generation to produce more energy from each unit of fuel, in electric distribution to reduce the transmission losses, and in electric power utilization to have each kilowatt hour do more or go further," Mr. Muir declared.

To illustrate the first of these objectives, he called attention to the fact that the 41,000,000 tons of coal used for the production of electric power in this country in 1920 produced 27,000,000,000 kwhr, whereas in 1934 exactly the same amount of fuel produced 57,000,000,000 kwhr due to improved generating equipment. Furthermore, he explained, it is reasonable to expect that in another 15 years, for each unit of fuel then used, the electric power produced will be one and two-thirds as great as is produced by one unit of fuel today.

The development of new alloy steels has made it possible to use high temperature steam of from 850 to 925 deg. F. This has made possible both the development of more efficient turbines and their superposition on top of existing steam plants. The development of hydrogen cooling as applied to rotary electrical machines is another outstanding example of the value of engineering research in effecting a more economical use of construction materials. This is particularly true in the application of hydrogen cooling to high speed turbine generators. While the commercial development of the hydrogen cooled high speed turbine has just commenced, its importance to the industry is great.

Average distribution loss of power systems of the country in 1920 was 21½ per cent. In 1936 this loss had been reduced to 15 per cent. The marked and continuing improvement of transformer efficiency has played an important part in reducing distribution losses, while improved materials, better manufacturing methods and particularly the development of the oil-filled cable have all contributed to the increased efficiency of insulated paper cable.

With respect to the utilization of electricity in the home, the aim is to make each unit of electricity do more for the consumer. For each kilowatt used for lighting last year the consumer received one-third more light, and each lamp cost him two-thirds less, than in 1920. Three electric refrigerators operate today with the same electric power that one refrigerator required in 1920, and the user may buy a superior unit for less than one-half the amount he paid in 1924. Similar advances have been made in electric ranges, radio receivers, washing machines, ironers, food mixers, toasters and heating appliances.

"This improvement in household and power consuming devices has been a matter of putting into them the same high technical ability, research and ingenuity as has been utilized in larger apparatus, and this must continue if we are to continue to make economic progress," Mr. Muir believes.

BANQUET

The banquet of the Institute took place Thursday evening in the Grand Ball Room of the Palmer House. President Kellogg presided, and the speaker of the evening was Dr. Gus W. Dyer, whose address appears elsewhere in this issue. An attractive program presided over by W. H. Childs as Master of Ceremonies included the Abbott Dancers, a group of twelve girls who presented a series of costume dances, The Northerners, a male octet, the Torrences, ballroom dancers, Miss Sylvia Clark, monologist, and the Drum and Bugle Corps of the American Legion Post of Commonwealth Edison Company. This corps, which holds the national championship among such organizations, presented a fine military appearance, and amazed its audience with its ability to handle music which ordinarily requires a full orchestra.

Following the banquet the guests adjourned to the Red Lacquer Room for dancing.

COMMITTEE MEETINGS

Some indication of the interest in and appreciation of the responsibilities being placed upon the Accounting people in the electric light and power industry is indicated by the attendance figures for the accounting meetings which were held in Chicago, May 31 to June 3 inclusive.

At a meeting of the Accounting Committee held on Monday, May 31, on a general discussion on the form of annual report being prepared by the Committee on Statistics and Accounts of the NARUC, forty-nine persons from all sections of the country were present. This meeting was held through all of Monday and occupied the attention of those present through Tuesday morning. Mr. C. E. Kohlhepp of the Wisconsin Public Service Company, Chairman of the Accounting Committee of the Institute presided.

A subcommittee meeting on Customers Relations, Accounting and Collections under the chairmanship of Mr. R. S. Holden, Public Service Company of Northern Illinois, was attended by some thirty-five persons interested in these subjects. It was necessary for Mr. Holden to postpone till evening his original plan of an organization meeting of

(*Continued on page 262*)

Address of the President

By C. W. Kellogg
President, Edison Electric Institute

An address before the Fourth General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 3, 1937

IT is my duty and privilege to report to you at this time upon the state of the electric utility industry and the progress it has made during the past year, with a glance at the future.

Statistical Data

First, as to general statistics, the industry is now serving 26,400,000 customers, a gain of about 810,000 over the preceding year. Output for the past twelve months was about 111,300,000,000 kwhr, which is 15 per cent above the previous twelve-months period. In the important matter of electricity in the home, average annual consumption per residence now stands at 755 kwhr, which is 63 kwhr larger than the year before; and the average residence rate for the twelve-months period just ended was 4.6c, thus continuing the steady decrease which the industry has shown for many years. Non-farm houses now receiving electricity total 21,050,000, a gain of 500,000 in the year.

In the field of rural electrification, the total farms electrified by our companies now stand at about 1,100,000 and the past twelve months show about 100,000 new farms served from our lines. The Federal Government through its Rural Electrification Administration is now financing the building of a considerable number of rural lines and its latest bulletin reports that lines have been built, are under construction or in the stage of getting bids, to serve about 90,000 rural customers, farm and non-farm, and some of these already have electric service.

Contrasted with the 15 per cent gain in energy output, gross earnings have increased but 8 per cent, due to lower average rates, and operating income has gained but 5 per cent, on account of rising costs. Besides higher payroll and fuel costs, taxes have gone up 10 per cent, now representing 15 per cent of gross earnings and about equalling what our stockholders receive.

Increase in energy consumption has required additional power generating facilities. It is perhaps not generally realized that in the early years of the depression, when electric energy requirements were falling, the generating capacity continued to expand (4,300,000 kw from 1929 to 1932) and it was largely on this extra capacity that the industry climbed out of the depression. Continued growth has naturally brought forth new generating plant development and capacity added since 1935, including that now under construction, amounts to 1,600,000 kw, which will bring the total installed capacity of the industry, after correcting for capacity retired from service, to more than 35,000,000 kw.

"It (our industry) is an exacting service but a fascinating one, because it means bringing and assuring the blessings of electricity to many millions.

"It makes an appeal to the minds and hearts of the men and women engaged in it which far transcends the mere making-a-living involved in many ordinary commercial pursuits.

"Let us never lose this vision of service and let us make it our constant inspiration to renewed efforts for the public welfare."

Financing

Financing in the past year has been affected by the cheap money market as to bonds and, in the future, for many companies equity financing will be affected by what transpires under the Holding Company Act. In 14 months ending in April, 1936, $1,500,000,000 of bonds had been sold by the electric utilities almost entirely for refunding at a lower coupon rate. Since then the sale of bonds for refunding has brought the total to $2,641,000,000 for the 26-months period ending April, 1937. It is interesting to note that prior to September, 1936, less than one per cent of the financing was for raising new capital and the vast majority was for refunding. Since September, 1936, new capital has accounted for 5 per cent of total bond financing. The sale of preferred stocks during the past year has been relatively small, amounting to about $127,000,000, of which 2 per cent was for new capital. Common stock financing has been negligible.

Construction expenditures for 1937 are estimated at $475,000,000, compared with $290,000,000 for 1936. As usual, the major portion of this year's expenditure will be for distribution facilities, generating facilities representing less than a quarter of the total.

During the depression construction requirements were so small that they could, by and large, be met by the current reserve funds of the companies without resorting to security issues. With the resumption of normal growth, however, further capital issues will be required and electric companies will then be faced with the necessity for raising equity money to support additional issues of bonds. For the larger operating companies this should present no serious difficulty, but the same cannot be said for the smaller companies in the holding company systems, which depend entirely on holding company support for equity financing and which represent in the aggregate 60 per cent of the electric utility business of the country. These latter may be unable to raise equity money in any substantial amounts by the sale of securities until the holding company status is cleared up.

The Holding Company Act

The constitutionality of the Holding Company Act is still undetermined by the courts. The Government, after using as the basis for quashing other litigation on the subject the claim that the mandatory injunction against the Electric Bond and Share Company would settle all questions raised in the other litigation, then proceeded to narrow its own case down to the separability of Sections 3 and 4 of the Act, so that final determination of that case may still leave the constitutionality of the Act unsettled. Even if the Act is finally declared to be constitutional, that would still leave unsettled the question of the real justice or practicability of the dissolution provisions of Section 11. Under this Section

the continuation or partial dissolution of a holding company system is made to revolve around the matter of integration; yet if integration, which we all recognize as desirable, is carried out between two companies of diverse ownership, dissolution may result, but if of similar ownership, no penalty follows. Not only is this arrangement illogical in itself, but it could easily result in one company, which had been practising the abuses prohibited in the Act, still being allowed to exist, while another, entirely free of such abuses, might be forced into partial dissolution. The arrangement also flouts and ignores the greater stability conferred upon any investment by diversity as to location.

Accounting Developments

During the past year the National Association of Railroad and Utilities Commissioners adopted a revised uniform system of accounts, and the Federal Power Commission adopted a classification of accounts closely conforming thereto. The system is more elaborate and costly than the uniform classification of accounts it was designed to replace, and it contains several important departures therefrom. At the present time nine States have adopted the new classification of accounts and eight States have made its use permissive.

Since the adoption of the new system of accounts, representatives of the Institute have conferred with the Accounting Committee of the National Association of Railroad and Utilities Commissioners on the important matter of defining units of property for accounting purposes, and they have been invited to attend another conference to be held later this month to consider the question of annual report forms.

Engineering

Engineering developments of the past year have been of a striking although not revolutionary nature; this is inevitable with the long history of intensive development in the past. Probably the most interesting items is the installation of "topping" turbines in existing generating plants. These machines, operating at pressures and temperatures corresponding with the best modern practise, exhaust into the steam mains of the existing stations, thus giving the combined station the full extent of modern economy and getting the increase in station capacity at less than average units cost for a new plant. The whole process represents a most significant economical saving to both investor and consumer by avoiding at a stroke what might otherwise have gradually become a serious obsolescence problem. Further progress has also been made in high speed relay operations and lightning protection, having the effect of more continuous service and saving investment in reserve lines.

Sales

Sales effort has continued unabated and has produced excellent results. The sales activity has been guided and stimulated by committee subdivision into the principle fields of activity, such as refrigeration, ranges, water-heaters, Better Light-Better Sight, and kitchen modernization in the residence field; and special study has been given to commercial and industrial possibilities. More electric water-heaters were sold in 1936 than in the previous four years and, with respect to refrigerators, whose sales last year were about 2,000,000, we find the first quarter of 1937 exceeding the same period in 1936 by 38 per cent.

While naturally the domestic customer has received the greatest interest during the past year, due to far outnumbering all other classes of consumers, the commercial and industrial fields have by no means been neglected, the former having shown 16 per cent and the latter 17 per cent increase in sales over the preceding year. In the commercial field, air conditioning has shown remarkable growth but due to poor load factor it is not altogether proving a desirable load to serve. The demand for this service is real, however, and our industry, in conjunction with the manufacturers, must grapple with the problems arising from this use for electricity to work out, in the course of time, the best answers to them.

In all this multifarious sales activity the manufacturers and dealers have played a large part. Our duty to the public calls for the continuance in the future of the most energetic sales effort.

Electric Wiring Standards

An item of great financial importance to the average man is the cost of wiring and appliances, for it has been conservatively estimated that the full-use home has twice as much investment within its own four walls in wiring and appliances and fixtures as the electric company has in plant to manufacture and distribute the electricity he uses. Your Institute has in the past year continued its efforts to get the approval of code authorities to modifications in the National Electrical Code which will permit the use of more economical wiring methods where they are equally safe to life and property. It believes some slight progress has been made, but that much remains to be accomplished in this essential field.

Rural Electrification

The great extension of lines into rural areas in recent years presents a special sales problem, for it is only by building up the load on such lines that they can be made profitable both to the farmer and to the utility. The Federal Government, through the Rural Electrification Administration has tried to make it appear that the utilities have endeavored to prevent the extension of electric service to the farms. You all know from experience that the exact reverse is the case—that the movement, conceived and inaugurated by the utilities themselves, is now at least 15 years old as a specially recognized sales and distribution effort and much older than that as to specific areas. The difficulties faced in working out the problem have always been the basic economic ones of high distribution cost per farm, where settlement was sparse, and the low cash purchasing power of many farmers. Our industry has tackled the problem on two fronts; the effort to reduce line construction costs consistent with safety and the study of new ways in which electricity can be used effectively on farms. Distinct progress has been made with both of these matters during the past year. As evidence of progress in the latter respect, notwithstanding the fact that 100,000 new farm customers were added, the average annual use per farm customer during the year increased 75 kwhr.

The necessity for increasing the farm uses of electricity and improving the load factor of farm lines can scarcely be overemphasized. It is of the greatest importance both to the farmer and to the company. Otherwise, farm electric service cannot be made to pay its own way and in the long run, of course, it must do so if it is to be continued. It goes without saying that if this is to be accomplished the increased use must be at rates sufficiently high to cover the cost of rendering farm service and pay a reasonable return on the necessary investment. It should not be at the expense of rate reductions disproportionate to the cost of service. Happily the farm uses of electricity are showing substantial progress and promise further advances in the future.

The REA program for rural electrification, which is calculated to extend power lines into still sparser farm territory than has yet been served, is clearly a subsidy from the taxpayer and should

be frankly designated as such. The Act as passed provided that the Federal funds for rural electrification should not duplicate existing rural lines of private enterprise. Proposed amendments at this session of Congress would eliminate this restriction. It is to be hoped that the Government promotion of rural electrification is not made a cloak for subsidized competition with unsubsidized investment of individual investors.

Government Competition

This leads to the matter of Government competition in the electric business. The subject naturally divides itself into two parts, municipal operation and Federal Government activity—although the two meet in the form of the W.P.A. grants of 45 per cent of the construction cost as a donation by the Federal Government to any city desiring to compete with its local utility. The recently revised plan of the P.W.A. is to donate only wages paid to workers taken from relief, plus 15 per cent. Since this means practically common labor, which is a relatively small part of power plant construction, the change is an important one.

In the field of municipal ownership the number of municipal electric plants established in this country in the four years ending 1936 was only 30, the smallest figure for any four-year period in the last fifty years. Also for the year 1936, out of 127 municipal elections involving a total population of 5,735,000 on the question of municipal ownership of electric utilities, only 49 elections involving 27 per cent of this population were favorable to municipal ownership. To have shown these results in the face of the most powerful propaganda machine the Government ever produced is most gratifying. It should, however, not cause us mere elation, but a feeling of deep satisfaction that we have been able to give the people on the whole a service of whose quality and cost they can approve and should increase our determination to achieve even better results in the future.

As to the Federal Government, the production of electric power can legally be undertaken only as a by-product or incident of some legal Federal function such as navigation improvement, flood control, irrigation, etc. In the case of the T.V.A. the Government's own figures show that three-quarters of the cost of the navigation dams on the Tennessee river arises solely from electric power. War Department figures show that power represents about 67 per cent of the total cost for the full development of the Bonneville plant on the Columbia River. The T.V.A. so far has charged no part of its navigation dams to power, although in recent testimony before a Congressional Committee the Chairman of the T.V.A. proposed to allocate to electric power 47½ per cent of the cost of Norris Dam, 49½ per cent of Joe Wheeler Dam and 45 per cent of the cost of Wilson Dam. If the T.V.A. followed the facts in the allocation of costs, it would make the T.V.A. hydro power cost two and one-half times as much as the same power could be made by steam, and the latter method would employ much more labor. Two questions naturally arise: (1) whether the public would approve continuing to pour millions of its money into T.V.A. if it knew the facts as to costs; and (2) whether the Courts would find that something costing three-quarters of the total was truly a mere incident of the other quarter—whether the tail was wagging the dog.

The Federal Government's power policy has resulted in the production of far more power than is needed for public consumption in the areas adjacent to its dams. It has been attempted to justify this by a cry of "power shortage." When it is realized that 94 per cent of the electric energy of the nation is manufactured or sold by the privately-owned electric utilities, and that for fifty years these utilities have been planning and building ahead of the public's needs, it naturally follows that the only way a power shortage could be produced would be for the utilities to cease to function as they have throughout their history. At the very time this "power shortage" propaganda was promulgated the industry had an excess over even normal reserve requirements of about 4,000,000 kw.

The Federal Government has placed in operation to date 164,000 kw at Norris and Joe Wheeler Dams by the T.V.A. and 370,000 kw at Boulder Dam. It is reported that 86,400 kw will be ready at Bonneville on the Columbia River near Portland by December. Eventual capacity of all Federal plants built, building or definitely planned is 6,500,000 kw, and the cost $1,250,000,000. The new capacity from these plants will create a large surplus of power within transmission range, for they are removed from the heavy power consuming centers of the nation. If to the initial cost were added the interest charges during construction and the cumulative deficit during the many years before revenues from the sale of power may be expected to equal operating expenses and fixed charges, the enormous cost to the taxpayer of these Federal projects would be even more apparent.

Government propaganda has magnified the power issue out of all proportion to its relative economic importance. The electric bill is about 2 per cent of the average family budget, while taxes are about 14 times as large an item. The cost of raw power is a relatively small part of the cost of service to the vast majority of customers; if power cost nothing, rates for the average household could be only slightly affected.

Local Relations

Throughout this year I have been preaching the doctrine that, vast and detailed and ramified as our business may be in its combined physical and other aspects, its purpose is simple and its essence small. That purpose or reason for existence is solely to furnish the best possible electric service to the maximum number of people, for the broadest usefulness to them and at the lowest feasible cost. It follows from this basic purpose that the fundamental element from which this great aggregate results is the service to the individual customer. No spring can rise higher than its source and our standing as an industry dedicated to the public service depends entirely upon the relative integrity and general satisfactoriness of this elementary relationship between the local company and its individual customer.

This same relationship is the basis for any truly democratic form of government, wherein the essential element for success or failure of the whole aggregate, represented by the nation, is the relative satisfaction of the individual with the system of which each person forms a small but essential part.

I believe our industry during the past year has concentrated loyally and effectively on its great task of public service, and that its achievements during the past year, represent a chapter in our long upward history which we may regard with pride and satisfaction. It is an exacting service but a fascinating one, because it means bringing and assuring the blessings of electricity to so many millions. It makes an appeal to the minds and hearts of the men and women engaged in it which far transcends the mere making-a-living involved in many ordinary commercial pursuits. Let us never lose this vision of service and let us make it our constant inspiration to renewed efforts for the public welfare.

Plans For Electric Industry's Participation In New York World's Fair

PLANS for the participation of the electric utility industry in the New York World's Fair of 1939 were presented before the Institute's annual convention by A. H. Schoellkopf, President of Niagara Hudson Power Corporation, and Chairman of the World's Fair Committee of the Institute.

The Committee, which includes, in addition to its chairman, Messrs. E. J. Doyle, L. H. Egan, O. H. Fogg, H. H. Porter, W. H. Taylor and W. L. Willkie, has been at work for several months studying the project and considering the part which the industry should take in the Fair.

The New York World's Fair promises to be the largest event of its kind ever held in this country. Estimates of the probable attendance, based on the experience of the Chicago "Century of Progress" Exposition, indicate that 50,000,000 people may be expected.

The theme around which the Fair will be developed is "Building The World of Tomorrow." "If any name could have been picked out that would have been more applicable to the electric light and power industry, I don't know what it is," Mr. Schoellkopf said.

The Committee has worked out preliminary plans under which the entire central station light and power industry will participate in the Exposition. The exhibit will be conducted under the auspices of the Institute and managed by the Committee. An option on an exceptional location at the Fair Grounds has already been obtained, and leases are being arranged.

The plans call for the erection and maintenance of an adequate and appropriate exhibit which will enable visitors to the Fair to appreciate the multitude of ways in which electricity lends itself to their comfort, convenience and happiness. It will interpret new standards of electrical living on a scale never before possible, and in a manner which will bring nation-wide attention and interest to the benefit of every electric utility company. It will show new industrial and commercial applications of electricity, and serve as an impetus to increased electrical usage in all parts of the country.

The Committee has appointed Clayton Irwin as its Director. Mr. Irwin has a broad background of successful experience in the exposition field. For nine years he was associated as part owner of the Radio World's Fair of New York and Chicago, and has served as Director of the annual Radio Trade Expositions at Chicago and Atlantic City. He has already made an extensive tour during which he has consulted with leading operating and holding company executives in many parts of the East and Mid-West, representing 8,500,000 meters, and has discussed the present tentative plans with them.

The success of any exhibit that may be undertaken by the industry, Mr. Schoellkopf pointed out, will depend to a very great extent upon the active part which the individual utility companies take in the development of these plans. With the unanimous cooperation of the industry the Committee expects to make the Electric Utilities Industry exhibit the dominant and most successful venture of the Fair. Without that unanimous cooperation, however, the Committee can do little.

While the formal membership of the Committee consists of seven members, Mr. Schoellkopf expressed the hope that every man in the industry who is concerned with promotional activities of any sort will consider himself an unofficial member and feel free to volunteer any ideas or suggestions that he can.

The Committee plans to hold four regional meetings between now and the time the Fair opens. To these meetings utility companies in the area will be invited to send their new business, promotion and public relations men to take part in the discussions and help to develop the final plans. It is the Committee's hope that in this way it may have the benefit of the combined thinking of the men in the industry who are doing locally every day in their own territories the things that the Electric Utilities Industry exhibit must do nationally at the New York World's Fair of 1939.

Alfred H. Schoellkopf, Chairman of the World's Fair Committee of the Edison Electric Institute, and Louis H. Egan, Committeeman, at the Committee's Exhibit Displayed During the E.E.I. Convention at the Palmer House, Chicago.

Liberalism and the Electric Industry

By W. C. Mullendore

Executive Vice-President, Southern California Edison Company, Ltd.

An Address before the Fourth General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 3rd, 1937

THE American business man is noted for his interest in and loyalty to his business. Indeed, this American trait has often served as the theme of literary, dramatic and other studies of American life—some in approval and others in disapproval. Perhaps it is because my imaginative, artistic or emotional senses are undeveloped, but I have been unable to understand why it should be thought a proper subject of unfavorable comment that a man of business should take a deep interest in his business. It would seem that a field of activity which of necessity absorbs much of an individual's life and energy, which affords to him and his family their means of livelihood, and provides opportunity for the exercise of such capacity for constructive efforts as he possesses, should be neither concealed nor apologized for.

When you are thus forewarned of my iconoclastic views you will not, I hope, be shocked when I further advise you that the burden of my remarks today will be a discussion and review of some of the reasons for our faith in our industry and our pride in its contributions to American life. Let it be further understood, and as the lawyer would say, stipulated, that this speech is directed to members of our industry itself, thus forestalling the common criticism that convention speeches are wasted effort because they reach only within the industry and hence represent only conversation with ourselves. This speech is intended to be "conversation between ourselves," and if it has any listeners, either appreciative or critical within the industry, I shall be content.

It may be suggested that we of the industry need no self-praise or stimulation of our self-esteem. I hope that is true, but we have been subjected to a rather continuous, relentless and bitter attack for the past several years, and there have been a few scattered indications that this attack has not been without its effect upon the faith, the confidence, courage and pride of some of us. At least, there have been a few instances in which our own people have taken an apologetic attitude toward their industry and appeared to agree that a great deal of the criticism directed at it was warranted. Of course, that is not a common or widespread condition, but insofar as it has created the impression that we have only ourselves to blame for this attack, it is not only unjustified but it is also unfair to the rest of the industry because such an attitude is seized upon as proof of the validity of much vicious and unintelligent criticism.

MR. MULLENDORE

Our business, like others, whether it is conducted in the name of a corporation or an individual, is made up of people, i.e., of sentient human beings. These people, strangely enough, have feelings just like other people. They have hopes and aspirations, ideals and pride, ambition and a desire to be well-regarded by their neighbors and friends. When the business in which such normal human beings are investing their lives is subjected from responsible sources to bitter attacks upon its honesty, integrity and trustworthiness, it should occasion no surprise that the members of that business group—these human beings who compose it—should exhibit some emotional reaction either of anger, resentment, fear or shame.

Let me also make it clear that I have no desire to arouse any feeling of anger or resentment against those who have unfairly and unjustly attacked us. To add to the excessive volume of hatred and to the currents of anger which are flowing through the world today can be only harmful, and we can contribute nothing constructive to our industry by so doing. Yet in our anxiety to refrain from bitter recriminations and from adding to the heat of controversy and in proving how long-suffering and reasonable we are, we should not forget that meekness and humbleness can be carried so far as to be mistaken for either fear or guilt, or both. The spirit of sweet reasonableness more than once has been so misinterpreted.

The subject of my remarks "Liberalism and our Industry" was in part suggested by a statement in a recent magazine article in which the writer rather more than hints that a Liberal in our ranks is "as rare as a purple cow." While the word "Liberal" has been so abused and misapplied of late that it is questionable whether it is any longer a desirable title, it is still not complimentary to have the suggestion made, as was clearly intended in this case, that our industry is the stronghold of people who are opposed to progress and who look backward instead of forward. To many of us the word "liberal" is still a grand word, notwithstanding its recent appropriation by many who advocate a return to the autocracy and statism of the dark ages. There are great numbers who understand the term liberal in its proper use as being applied to those who fight for greater freedom for the individual, who welcome new ideas, who are independent in their opinions, and who are receptive to suggestions of new methods and processes which offer real improvement and progress. Thus understood, most of us would like to be known as liberals, and thus understood there is no group in America, industrial or otherwise, who have a better claim to the designation "liberal" than this group of which we are a part as members of this industry.

If you will pardon the personal reference, I feel that I can praise the liberalism of our industry without unseemly

immodesty, because as compared with many of you I am a newcomer to the ranks. I was not brought up in this industry, nor am I without experience in other fields of activity, and joining up here was with me a matter of deliberate choice because it appealed to me, as it has to thousands of others, as offering not only a field of wide opportunity but association with a group which is outstanding in its progressiveness and in its leadership. And unless I have seriously over-estimated the caliber of human material of which this industry is composed, neither that leadership nor our liberalism will be surrendered without much more of a struggle than has yet been witnessed.

What should be expected and required of an industry which lays claim to leadership in progressive contributions to the development and the welfare of the country of which it is a part? I believe few will dissent from the proposition that such a claim should be subjected to at least these basic tests:

First: Such an industry should provide a service or commodity which contributes to the advancement of the standard of living of the country as a whole;

Second: The progressiveness of the operators of the business should be demonstrated by continual improvement in their service and by a lowering of its cost so that it may be made available to an ever-increasing number of people;

Third: This business must be in the hands of people who are sensitive to their responsibility, who have enough imagination to foresee the public need, and enough resourcefulness to devise ways and means of meeting the increasing needs; and

Fourth: Those who would successfully claim leadership in an American industry must have a sincere sense of stewardship and trusteeship which safeguards the public interest in their industry; they should furthermore exhibit a genuine willingness to cooperate with governmental authorities in making effective necessary regulation, and they should make available to the public full information from which the wisdom of their administration and the faithfulness of their stewardship may be adjudged.

We should ask only to be judged in our claims of liberalism and leadership by our ability to meet those tests, and we may here briefly refer to some of the evidence in support of our claims: Only a little more than half a century ago the possibilities of this little understood form of energy called electricity were practically unknown. Starting with the demonstration by Thomas A. Edison of the practicability of the generation and delivery of electrical energy to consumers' premises, there has been developed within the past fifty years by the people within our industry a constantly increasing number of applications to the performance of tasks which have greatly advanced the American standard of living. We have succeeded in bringing our product and service in ever-increasing quantity and at ever-decreasing cost to a larger and larger section of the public. The use of electricity is today almost 25 times what it was 35 years ago, while its cost has in the same period decreased until it is now less than one-third that of 35 years ago. This remarkable reduction in cost has been achieved too in the face of such equally remarkable increase in charges upon the industry as a tax bill not 25 but 94 times what it was 35 years ago. Almost 22 million of the 30 million American homes, three-fourths of the factories, our cities, our commercial establishments and hundreds of thousands of our farms are today served by and are to a large extent dependent upon this electrical servant.

There is an altogether remarkable ability to ignore the true history of our industry exhibited by those who are today among its most severe, if not its best-informed, critics. They would have the public understand that the service of electricity as it is known today is largely a gift of Nature which has been appropriated by the public utilities. Their constant references to the appropriation by "private interests" of the "natural resources" would lead the uninformed to believe that electrical service in the home, in the factory, and in all of its myriad applications today was the result of a natural phenomenon like lightning or a rainstorm. They tend to ignore the existence of or to treat as interlopers those human beings who are today operating the power plants, the transmission systems, the substations and the distribution lines. These patrioteers who are so concerned to transfer this great natural resource industry from private to political management find it convenient to forget those who plan and build and maintain this service in fair weather and in foul, through floods, and cyclones and earthquakes. The politician talks of God's free gift to the people but does not mention those who, together with their pioneer predecessors, over the past fifty years, by assuming great risks and by courageous enduring of losses and by overcoming skepticism and doubt, through the exercise of their own enterprise, initiative, and resourcefulness have bridged that enormous gap between the crude dynamos of the early eighties and the enormous generators of today, between the Pearl Street station serving a few lights in one section of a city and the great interconnected systems of today, meeting the manifold demands of modern civilization in millions of homes, stores and factories.

Let us recall just one or two of the major improvements which had to be made before this new form of energy could be made available where it was needed: First, there was the development by successive stages in the decade from 1890 to 1900 of the possibility of long-distance transmission of electrical energy. Prior to that demonstration, there had grown up a considerable number of small and isolated power plants, many of them municipally-owned, many others badly financed, and all furnishing what would be today an impossibly poor and unsatisfactory service. And who has been responsible for the continued progress of long-distance transmission in which all the public has so bountifully shared? This transmission did not just happen. It was not a natural resource except as the ingenuity and resourcefulness and determination of man are natural resources. No, it was the result of the struggle and the sacrifice and the courage of these private citizens—members of our industry—men who did not stop to consider whether they were liberals or conservatives, who did not ask for government subsidies nor special privileges, whose accomplishments for the benefit of their fellow-man must be attributed to the American system of private enterprise, with its freedom and its atmosphere of encouragement to achievement by the self-reliant individual.

Then there were similar progressive stages in the improvement of electrical generating machinery, the contributions not only of Edison but of Brush, Stanley, Tesla, Westinghouse and many other individual private citizens, whose liberal and progressive ideas as well as their labors, made possible the perfection of the small generator of the early days, and followed on through to the great generators, of high efficiencies of today—a series of vital improvements and additions, without which the electric service of today would be impossible, even

though we had the same falling water, fuel supplies and other raw materials, or even though we had just as many government employees.

In many respects most remarkable of all have been those contributions made by hundreds of individuals who have invented and improved the innumerable devices through which this electrical energy, when generated and transmitted to the consumer's premises can there perform the services which it today performs in all the complex activities of our national life. Hundreds of millions of slaves thus have been put at the service of the American workman and the American housewife. These slaves, dependable, efficient, quiet, and constantly at the command of the customers of our industry are, let us repeat, doing their work at a decreasing cost at a time when other costs of living are rising.

Just recently we held a convention of the Pacific Coast Electrical Association, at which it was recalled that since our first meeting 20 years ago, in 1917, there had been developed such universally significant applications of electricity as radio, refrigeration, air-conditioning. It was further recalled that within the past five years a number of further devices were brought into service.

When the great bridge which today spans the waters of San Francisco Bay was planned a few years ago, there was no such thing as a sodium vapor lamp. Yet by the time the bridge was finished, this lamp had been perfected, tested and proven eminently practical for the peculiar problem of illumination required on the bridge.

When the aircraft industry turned to all metal construction, there was a problem of welding. This was tackled by our research laboratories, and within a remarkably short time there was available a welding control of such accuracy that it would operate within a range of two cycles or 1/25 of a second. When the aircraft industry wanted signal lights, beacons, flood lights for landing fields, radio beams for navigation, and a number of other requirements to meet their exacting needs, these were produced by organizations represented in this room today.

When printers needed better control of color registration on their presses, the device for obtaining this was produced and supplied by the electrical industry. Our automobiles are better, stronger and lighter than they were ten years ago, due to better alloys, and this product is in turn largely due to processes in which our industry has played a vital part.

These are but typical of the many developments which have been going forward within our industry during the past few years—a period in which not only was there the greatest depression in our history, but in which we were also subjected to the bitterest persecution and most unfair competition by agents and agencies of government. Not once during that dark period has there been a cessation of the improvement of our service or of the reduction in the cost of that service which has been so characteristic of our history. Yes, even in the face of these attacks, there has continued that growing public appreciation of the value and greater use of our services.

It is true that generally speaking, those outside of our industry have troubles of their own and they should not be expected to come to our assistance in controversies in which they are not immediately involved. Nevertheless, upwards of twenty million American families and business men are continuously giving the most unbiased evidence of their approval and appreciation of our industry's service. This approval has been and is being given by our customers, whose constantly increasing use of our service and products in this highly competitive market of the United States gives indisputable testimony that by the most important test of all, the test of consumer acceptance, we are given a vote of public confidence. What better proof of public appreciation of the value of our service could be asked than that which has been given in the past several months of increased business activity? Why has electric power consumption been a leader in the recovery? What better proof of public endorsement of both our rates and our service than the impartial verdict of the marketplace evidenced by new records of consumption by all classes of our customers? The availability both of cheap electric energy and of electric appliances and processes admittedly have been one of the greatest, if not the greatest, single forces in our country's emergence thus far from the depression. And but for the indomitable spirit of the people of this industry, this vital contribution to recovery might well have been lacking.

Many of the most common arguments which are used in an endeavor to persuade people to turn from private to political management of the electrical industry, constitute unwitting tributes to the success of our endeavors. For example, we often hear the advocate of political management argue that no industry which is so important to public welfare and upon which so many people are dependent should be under the management of private citizens. It does not seem to occur to those who use that argument that if the industry is thus important, and we agree that it is, it is important because private management has made it so. It did not just grow up like Topsy; it did not just happen; it was, let us never forget, made important by those private citizens who today, we are told, cannot be trusted with its management. Is it not a bit incongruous to argue that people who can develop an industry from its pioneer stages to a position of leadership in the most progressive nation in the world cannot be trusted to continue to manage that industry, but that it should be turned over to the management and direction, under political overlordship, of a group who have thus far shown little understanding of the industry's operation and little capacity for its improvement?

Neither is our liberalism and progressive records confined to the mere physical development and expansion of electric service. The true type of American public ownership—the participation by millions of customers in financing from their savings the extension of this service affords another example of an improvement in method which is both progressive and typically American. Why have these millions of citizens seen fit voluntarily to invest their savings in this industry under the present system of private management and public regulation? Is that investment not another eloquent testimonial of confidence in the electrical industry as it exists today in America?

Again, we can point with pride to the public character not only of our service but of the information concerning our operations. If any industry in all the world does business in a glass house, it is this one with which we are connected. Not only our rates and charges, our receipts and expenditures, but all our investments, costs, salaries, wages, donations, contributions, losses and gains are spread upon the public records. Our customers have available to them as much information as do the owners of the properties, the stockholders. If there is any information concerning the details of the conduct of our business which the public does not have at its command, its omission can be charged only to the fact that no one has yet thought of it. What a misnomer it is to call our business "pri-

vate." All the business activities of these miscalled "private" public utilities are in fact much more fully disclosed to the public than are those of many of the governmentally-owned and operated units. Particularly is that true of the accounting as to costs and charges.

If, then, liberalism and progressiveness consist in part of carrying on activities in the full light of day, as many of the experts in liberalism urge, may we not challenge comparison of our industry with any and all others, whether privately-managed or governmentally-operated?

I said in the beginning that I did not propose here to discuss our mistakes and shortcomings. Those are subjects which have not suffered from lack of attention elsewhere. Of course we are not perfect. We have never asked that we should be exempted from either criticism or discipline. We have only asked fair treatment—just some recognition of our contributions to the public welfare along with criticism of our mistakes. We have never claimed that we have attained the ideal but surely we, as useful citizens, have the right to ask that we be judged by comparison with others in an imperfect world and not by comparison with a standard of perfection which as yet has never been approached—least of all by our critics.

We will, let us hope and believe, make further notable progress. The electrical age has indeed just begun. We can, and we will if we are permitted to do so, make additional great contributions both to the standard of living and to the tenets and principles of the true liberals in American business life. I have endeavored only to outline a few of the accomplishments of the past which point the way to our future.

We will make still further intensive efforts to lower our costs, while paying higher taxes. We will continue to use our best efforts to cultivate good public relations through performances rather than promises, even in the face of unfair competition subsidized by government, and in the face of attempts to intimidate us through government investigations and inquiries.

I for one have never believed that the attack upon our industry was caused by or inspired by those few conspicuous but very exceptional mistakes within the industry. The record will disclose that the attacks had their inception not in a desire to correct mistakes from within the industry but in a desire to promote political management from without; and that in such promotion there was a carefully planned campaign to magnify a few mistakes and to play up the exceptional as typical. In other words, the mistakes were the excuse for the bitterness of the attack rather than the reason. The campaign against the industry was not inspired by our lack of liberalism or progressiveness but rather because of that very liberalism and progressiveness, which, having developed under private management, was a menace to the real goal of political management. In short, our industry has been honored with special attention not because it was so bad but because it was so good.

I am not advocating a public relations program based on boasting as to how good we are. I agree with those who favor letting our actions speak louder than our words. But at the same time let us not be so apologetic as to give a false appearance of shame in the face of attack. Let us be respectful of authority, but not so abjectly respectful that we fail to exercise our rights as citizens to insist that authority shall not be abused. Let us be neither so modest nor so timid that we fail to assert a proper pride in our work.

True liberalism seeks to advance new ideas, new processes and new methods through encouragement by reward and proper recognition of the merit of all who can contribute to progress. True liberalism holds that the laborer is worthy of his hire and that the use of the powers of government to destroy individual leadership is a crime against society. As trustees of a great liberal industry we dare not lose faith in that industry nor fail in our obligation to fight for the preservation of those conditions which have made possible its leadership.

National Electrical Safety Code Now Under Revision

A REORGANIZED sectional committee for the revision of the National Electrical Safety Code has been formed to function under the procedure of the American Standards Association with the National Bureau of Standards as sponsor. At a meeting of this committee held in Washington on May 24, Dr. M. G. Lloyd, Director of the Safety Division of the National Bureau of Standards, was elected chairman; C. B. Hayden, Assistant Chief Engineer of the Wisconsin Public Service Commission, was elected Vice-President; and A. B. Campbell of the Edison Electric Institute, was elected Secretary. The purpose of this revision is to bring this code into conformity with practices, methods, and types of construction that have come into use since the last revision was made.

As this sectional committee is constituted at present, 22 organizations or groups are represented. Additional groups will be given an opportunity to be represented on technical committees if such representation is desired.

Following an extended discussion on numerous aspects of the National Electrical Safety Code, it was decided that a technical committee would be formed under this sectional committee for each of the following subjects:

Section 9, Rules covering methods of protective grounding.

Part 1, Rules for the installation and maintenance of electrical supply stations.

Part 2, Rules for the installation and maintenance of overhead and underground electrical supply and communication lines.

Par 3, Rules for the installation and maintenance of electric utilization equipment.

Part 5, Rules for radio installations.

Part 4, which contains rules for the operation of electrical equipment and lines will be handled by each of the technical committees giving consideration to those rules in Part 4 relating to its respective scope. It was decided that no technical committee would be formed on Section 1, containing Definitions of Special Terms until the other committees are under way and it can be determined if a technical committee on this subject will be necessary.

As this code deals principally with electric light and power equipment, maintenance and operation, and is applied in many places in whole or in part by regulatory authorities, it is important that careful consideration be given to this revision.

The only suggestions that have been made thus far by the Electric Light and Power Group relating to this revision of the code are general in nature and are as follows:

a. The Code should be both in substance and form so that it will continue to serve as

(*Continued on page 261*)

Coffin Medal Awarded To Consolidated Edison Company

THE Charles A. Coffin Medal, most coveted of all awards for which electric light and power companies can compete, was awarded to the Consolidated Edison Company of New York, Inc., for "a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry."

The award was announced by Charles W. Kellogg, President of the Edison Electric Institute, Friday morning, at the final session of the Institute's fifth annual convention. Gerard Swope, President of the General Electric Company, made the presentation. John C. Parker, vice-president of the Consolidated Edison Company, accepted the award for the company.

In announcing the Award, Mr. Kellogg said in part: "The winning company, together with its subsidiaries, supplies electric service to the greatest metropolitan area in the world. The habits of the people and the very size and structure of the city itself have been shaped and built upon electric service, creating the most exacting demands upon the company which furnishes that service. In this difficult situation the winning company has supplied electric service of as high quality as is to be found anywhere in the world."

The outstanding accomplishments of the winning company, in the opinion of the Judges, were as follows:

Its progress toward unification and simplification in the corporate structure of the company, a proceeding of great inherent difficulty which was skillfully handled with remarkable success. Eleven mergers and consolidations were consummated during 1936 so that the system now comprises but seven company units.

John C. Parker, Vice-President, Consolidated Edison Co. of New York, Inc., receives the Coffin Award for his company from Gerard Swope, President, General Electric Company

The company's sales promotional activities have been vigorous and have resulted in substantial increase in the use of its service. Its advertising program for newspapers, radio and direct mail and its displays were of high quality, winning widespread recognition to the advantage and benefit of the entire industry.

The company effected a substantial simplification and reduction in its rate schedules.

It has continued the improvement of its physical properties. In the installation of super-imposed turbines with hydrogen cooled generators, and in its studies and redesigns of load distribution and distribution networks, it has contributed further to the knowledge of the art.

The company carried out an extremely large scale refunding operation on a most favorable basis.

These and many other accomplishments give evidence of well developed plans and of notable progress in their execution to assure the highest quality of metropolitan service at attractively promotional rates.

Judges were Mr. Kellogg, Dr. Karl

(*Continued on page* 264)

Frank W. Smith, Chairman of the Prize Awards Committee presents the Thomas W. Martin Award to Harold B. Waldron, Vice-President, Niagara, Lockport and Ontario Power Company (a bronze plaque to the company showing greatest advance in rural electrification during 1936).

P. M. Parry, Vice-President, Utah Power and Light Company, holds the Hughes Trophy which George A. Hughes has just presented to him as a representative of the company showing the greatest contribution in 1936 to the development of the Domestic Electric Cookery Load.

Curtis prize winners and the co-donor of the Curtis Awards for the greatest contributions to artificial illumination of commercial and public buildings—Robert W. Butts, Ohio Public Service Company; C. S. Green, New Orleans Public Service, Inc.; Darwin Curtis, Curtis Lighting, Inc., and Oliver R. Hogue, Commonwealth Edison Company.

Winners of 1937 Prize Awards

THE winners of the prize awards, sponsored each year by the Edison Electric Institute, were announced at the Fifth General Session of the Convention, June 4, by Mr. Frank W. Smith, Chairman of the Prize Awards Committee of the Institute. A report of the Prize Awards Committee, in which the value of the competitions to the industry were stressed and acknowledgments were made to the donors of the prizes, was made at the same session. This report will be published in the next issue. In most cases the prize winners were present to receive the awards from the donors or their representatives.

Mr. Smith reported that 232 papers and exhibits were submitted by employees of 95 companies in 40 states and Canada, and these papers, like those submitted in previous years, will be on file at the Institute Headquarters, where they may be examined, or loaned to member company representatives upon request. The many valuable contributions brought forth through these contests will be reproduced in forthcoming issues of the Edison Electric Institute BULLETIN and the trade journals.

Mr. Smith announced the establishment of a new award to be known as the R. B. Marshall Award, offered through the courtesy of Mr. R. B. Marshall, President of Electromaster, Inc. The award provides for five prizes of $100 each for individual sales achievements in electric range sales over a twelve months' period. Details of this award will be announced at a later date.

The awards and their winners were:

Augustus D. Curtis Award

To the company showing the greatest contribution to the advancement of Artificial Illumination in commercial and public buildings.

Certificate Awarded—New Orleans Public Service Incorporated, New Orleans, La.

HERBERT O. HUSSONG

Cash Prize, $300—C. S. Green of the Sales Promotion Division.

Honorable Mention—Ohio Public Service Company, Cleveland, Ohio.

Cash Prize, $200—Robert W. Butts, Commercial Representative of the Sandusky Division.

Honorable Mention—Commonwealth Edison Company, Chicago, Ill.

Cash Prize, $100—Oliver R. Hogue.

The George A. Hughes Award

To the company showing the greatest contribution to the development of domestic electric cookery load.

Cup Awarded—Utah Power and Light Company, Salt Lake City, Utah.

Cash Prize, $1,000—P. M. Parry, Vice-President in Charge of Commercial Activities, for distribution within the terms of the award.

The Thomas W. Martin Award

To the company showing the greatest contribution to the advancement of rural electrification during the year 1936.

Bronze Plaque awarded to the Niagara, Lockport and Ontario Power Company, Buffalo, N. Y.

Honorable Mention—Alabama Power Company, Birmingham, Ala., and the

E. M. WAGNER

L. M. LAPORTE

NEIL E. HEIKES

CLARENCE M. KILIAN

R. L. GREENE

J. M. MOUSSON

Louisiana Power and Light Company, New Orleans, La.

H. M. Byllesby Prizes

(Subject—Accounting)

First Prize, $100—H. O. Hussong, California Oregon Power Company, Medford, Ore.

Second Prize, $50—Messrs. L. M. LaPorte and E. M. Wagner of the Milwaukee Electric Railway and Light Company, Milwaukee, Wis.

Third Prize, $25—Neil E. Heikes, Public Service Company of Northern Illinois, Chicago, Ill.

Honorable Mention—Joseph E. A. Ross, Consolidated Edison Company of New York, Inc., and Harold G. Creamer of the Public Service Co. of Northern Illinois, Chicago, Ill.

B. C. Forbes Prize

(Subject—Public Relations)

Cash Prize, $250 — Clarence M. Kilian, Alabama Power Company, Birmingham, Ala.

Honorable Mention—E. R. Eberle, Public Service Electric and Gas Company, Newark, N. J.; Messrs. L. M. LaPorte and E. M. Wagner, Milwaukee Electric Railway and Light Company, Milwaukee, Wis.; Messrs. F. J. Porter and J. E. King, New York and Queens Electric Light and Power Company, Long Island City, N. Y., and Henry H. Carpenter, Blackstone Valley Gas and Electric Company, Woonsocket, R. I.

A. L. Lindemann Prizes

(Subject—Electric Cookery)

First Prize, $150—Paul L. Meyers, Florida Power and Light Company, Bradenton, Fla.

Second Prize, $100—R. L. Greene, Detroit Edison Company, Detroit, Mich.

Third Prize, $50—George E. Kelley, Portland General Electric Company, Portland, Ore.

James H. McGraw Prizes

(Subject—Engineering)

First Prize, $250—J. M. Mousson, Safe Harbor Water Power Corporation, Baltimore, Md.

Second Prize, $150—Wallace C. Rudd, Consolidated Edison Company of New York, Inc., New York, N. Y.

Third Prize, $100—Anson D. Marston, Kansas City Power and Light Company, Kansas City, Mo.

W. C. RUDD

ANSON D. MARSTON

GEORGE E. KELLEY

The Building and Operating of Utility Systems On an Interconnected and Coordinated Basis

By Philip Sporn

Vice-President and Chief Engineer, American Gas and Electric Company

An address before the Second General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 2, 1937

INTERCONNECTION appears to be an old subject and one which for a long time was linked with its apparently inseparable twin "superpower." It is a subject that was discussed on more than one occasion before the National Electric Light Association. It was discussed in an authentic manner by an outstanding authority on the subject, Mr. George N. Tidd, in a paper presented before this latter group in 1928.

But the era of superpower seems to have definitely disappeared some seven or eight years ago, and none of us regrets its passing. Of all the ideas and terms loosely used, superpower was undoubtedly the prize winner in the field: It had the distinction of being the subject of more conversation and less understanding than almost any other utility idea. Nor had it much more economic validity. But the disappearance of discussion and the present lack of interest in the subject of interconnection is less understandable. For interconnection is a horse of another color and it cannot be overlooked. To forget it may prove dangerous.

There are a great many apparently good reasons for the present indifference to the interconnection idea. For one thing, many lines were built in the expansion period of the middle 1920's and a large proportion of them were high tension lines. With the building of these lines many of the systems settled down to a quiescent state, confident in the belief that they had developed a fully interconnected system. But, one interconnection does not necessarily make an interconnected system, nor do two, nor any specific number. Again, there are many cases today where interconnections might be made but no interconnections are even being considered because people now are increasing capacity by putting in "topping" units. "Topping" or "superposition" is the style. This, too, is unfortunate because aside from the fact that fad or style has

MR. SPORN

no business in the development of facilities of the utility systems, the overstressing of the cost of generation always carries with it the danger that sight will be lost of the fact that cost of generation is a very poor criterion and, very definitely a dangerous one, if used as the sole criterion, of the cost of electric service. There are cases today where no interconnections exist because an economic study of the particular interconnection having been made once and found unjustifiable, the interconnection idea has been dropped and not revived or restudied regardless of the changed circumstances that might today give a totally different answer. There are other cases where interconnection is not being considered because the managers of the properties are confirmed believers in the economic soundness of local generation and in the absolute unreliability of any and every kind of transmission line, no matter how short or how well designed and operated. In these cases consideration has not been given to the fact that there is an economic limit to the breakdown of the size of the generation unit and that in taking flight from the old herd idea of excessively large scale centralized generation and long-distance transmission so popular some ten years ago, neither relief nor safety is to be found in the once maverick notion, now rapidly becoming a new herd principle, of great multiplicity of power generation units. Besides, they have forgotten that the technology of transmission has been definitely advancing.

This group has received a great deal of support and confirmation of its views from the policies of the Public Works Administration during the last five years. This agency, too, has followed a consistent policy of supporting local generation no matter how well supplied an area might be with interconnected system facilities. But I take it that most of us here are at least unanimous in this belief, namely, that over a long period of time it will not be possible to give better or cheaper electric service by developing less efficient plants and systems, and that, of course, is what generation localized in small enough units means every time. Finally, since the 1920 decade when interconnection was on every tongue, so to speak, there has been enacted the Public Utility Act of 1935. The natural tendency of that Act is to retard the integration and interconnection of utility systems. However, there are quite probably some cases where interconnections might be made with advantage even under the unfavorable atmosphere created by that Act.

All of this is unfortunate because any impartial appraisal of the accomplishments of the electric utility industry in the United States as a whole, over the past fifty years, is bound to impress one with the magnitude and magnificence of the way the job of coordinating and interconnecting electric utilities has been carried out.

Interconnection has developed naturally heretofore, that is, along sound eco-

nomic lines. No attempt has been made in its development to make interconnections for the sake of interconnection. There has been no attempt made to coordinate systems along neat, paper patterns or into primly cut out regions, beautiful as such patterns look to those inexperienced in the building and operating of utility systems, and advantageous as such a system might be from a national regulation viewpoint. Rather the principal stress has been laid on developing systems which would give better service at lower cost. And in the main the utilities of the country, operating under private management and acting voluntarily have succeeded admirably in the task of interconnecting and coordinating their systems. But, in order to keep the record straight, it must be admitted that there are some gaps, perhaps not too many gaps considering the difficulties involved, but too many if any of these gaps are being left open when the proper time for closing them has arrived.

Now the proper time to be able to do almost anything in the way of expansion of physical facilities on an electric system is no different than in any other kind of a business and that is in the period when the business or load is growing. The electric utilities of the country are going through such an expansion period at the present time. The present time may, therefore, be the time for closing some of the gaps in the interconnection picture. It behooves us, therefore, to re-examine this business of interconnection and find out what is behind it, what is its basic philosophy, what are the benefits that can accrue to a system and to the public which it serves, what are the difficulties in the way of putting it into effect, and what can or should further be done about it. Within the limits of the time available today, I should like to touch upon all of these.

II. What Interconnection Is

Basically, interconnection of utility systems involves the idea of so operating the component parts of a system or a group of separate systems that under all conditions generation and transmission are accomplished in the most efficient manner. This means that the power supply will be handled not only with no substantial sacrifice of reliability of supply, but with actual enhancement of that reliability under normal conditions, and with very positive assurance of service under conditions of unforeseen emergencies that cannot be provided for economically, if at all, in any other manner except by making available sources of supply from points remote from the immediate area subject to the emergency or contingency condition.

The philosophy behind interconnection then postulates the idea of mutual help and of mutual support in times of need, without stint, up to the limit where the helper himself is jeopardized. This is very important, because now and then one comes across systems where all the instrumentalities for interconnection are available, yet no true interconnection exists. The reason is that those responsible for the planning and operation of the system in such cases have not really been converted to the idea of interconnection. They merely play with the idea. They are inwardly afraid that if they operate interconnected they will subject themselves to, and will have to share, other people's troubles. Yet, the philosophy of operating truly interconnected, as I have pointed out, is sound, provided you grant that the technique of operating interconnected can be so developed as to reduce the self-jeopardy of the aiding part of the system, or of the aiding system, to a negligible amount. But, it is necessary to definitely embrace a philosophy of operating interconnected. The balance of it is a question of technique; and although this is neither the place nor the time to discuss technique, it can definitely be stated that the technique of operating successfully on an interconnected basis has been developed and is being more closely perfected every day.

In the light of this definition, it is apparent that many cases of so-called interconnection are not interconnections in the true sense of the term, because the amount of help that they make possible and the resources that they make available for mustering in cases of emergencies, are definitely circumscribed and limited. Thus, Fig. 1 is an example of

Fig. 1

a poor interconnection and the reason is that between system A and system B there are two transformations and the maximum power that can be transferred over line L is limited not only by the impedance drops through the two transformer banks, but definitely by the thermal limitations of these transformers, which in only rare cases will be anywhere near equal to the thermal limitations of the line itself. Or consider Fig. 2 where system A interconnects with system B and with system C through

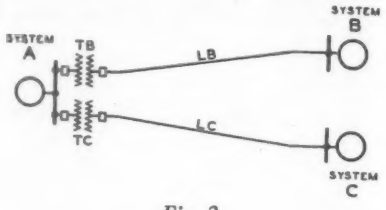


Fig. 2

lines LB and LC, respectively. Here again not only is the extent of help that A can render to either B or C limited, but in emergency B and C are limited in the help that they can render each other through the double impedance drop of, and the thermal limitations of, transformer banks TB and TC. Yet a number of such interconnections have been built in spite of the fact that conditions would have permitted the omission of the transformers, and the probably true reason for them has been that their proponents did not believe firmly enough in, nor felt certain of, the soundness of the idea and philosophy of operating interconnected.

III. What Can Be Accomplished by Interconnection

The theoretical benefits of operating interconnected presumably are too well known to warrant any detailed discussion. Basically they include the possibility of centralizing generation at economical locations and in economically sized plants and units; the cutting down of operating reserve; the taking advantage of diversity; the staggering of construction of capacity between parts of a system or between different systems; the more efficient utilization of existing generating facilities; and most important of all, the supplying of help in case of an emergency. All these are splendid. But they are terms—nothing but words. And rather than define them by more words, I should like to give you some examples from our own experience over the last two years—some definite examples of new things we have done by and through interconnection. Many savings that we have made on old interconnections or on newly worked out interconnections are developments that were not exactly simple, but yet, once they were worked out, they made possible improvements in grade and cost of service that could not have been made in any other manner.

1. Most of you are familiar with the fact that the system of the American Gas

and Electric Company is interconnected with that serving the Chicago area. The actual interconnection is through the facilities of the Indiana & Michigan Electric Company, one of its subsidiaries. That Company, operating in northern Indiana and in Michigan, interconnects directly with the Northern Indiana Public Service Company which in turn is interconnected with the Commonwealth Edison Company operating in Chicago. These two areas have very striking diversity characteristics, particularly during the five winter months, our own interconnected system having a characteristic morning peak and the Chicago interconnected system having a sharp evening peak. During the entire period of the depression, interchange schedules were set up and carried out between the two groups to take maximum advantage of this diversity. But as we started to climb out of the depression, we found that our own loads were growing rapidly and although we had authorized plant extensions, it nevertheless appeared that before those extensions were completed we might be short of capacity. Since we already had interconnection facilities, we developed an arrangement that enabled us, without interference with diversity schedules previously mentioned, to obtain the needed capacity from the Chicago area by a short-term contract which provided immediately the capacity needed until new capacity could be completed. At that time it will be entirely feasible to reverse this procedure if there is any occasion for it. This is a practical demonstration of staggering construction of generating facilities. Savings in fixed charges running into as much as a million dollars a year are entirely realizable in some cases by such a procedure.

2. For some fifteen years the system of The Ohio Power Company in Ohio, another one of our subsidiaries, has been interconnected with the systems of the Ohio Public Service Company and the Toledo Edison Company. Fig. 3 shows the details of this interconnection. It will be seen that the physical interconnection between the two groups was at three points and through four different interconnected lines, two of them at 132,000 volts and two at 66,000 volts. For many years prior to 1930, a system of displacement interchange was in effect under which Toledo delivered power into the northwest district of The Ohio Power Company, and Ohio Public Service took out a corresponding amount of power in the neighborhood of Massillon and Canton, Ohio. During the depression the difference in generation costs between the Philo and Toledo plants, owing to the much more expensive fuel at Toledo, was taken advantage of to effect economy interchange. As high as 10,000,000 kwhr per month was exchanged with substantial savings to each group. This interchange and the amount of mutual help in emergency was limited, however, by the 66 kv connected and the two intervening transformations connecting the Ohio Power system with Toledo.

Here again, as loads began to climb and the idle capacity began to be used up, the Toledo and Ohio Public Service Companies were faced with the problem of increasing their system capacity. Their studies indicated that an additional unit should be installed at the Warren Plant to meet the load requirements in that area. Joint studies with The Ohio Power Company indicated, however, the economy of installing the additional capacity at Toledo instead of Warren and strengthening the interconnection between the Toledo and The Ohio Power Company systems by building a 132-kv tie between them. To make it possible for the Ohio Public Service Company to meet its load area requirements in the territory of the Warren Plant, The Ohio Power Company agreed to furnish it capacity at Canton from Philo. Toledo and Ohio Public Service Company jointly agreed to return this at Fostoria, where The Ohio Power Company needed it, over the new Toledo-Fostoria line. This accomplished several things: It strengthened the interconnections between these three companies; it gave the Ohio Public Service Company the necessary capacity on the eastern section of its system; it brought in another necessary source of supply to the northwest section of The Ohio Power Company; and paved the way for economy interchange between The Ohio Power Company and the other two systems in greater volume which will result in increased savings for the three companies. This, it appears to me, is a perfect example of coordinated development of two different power systems, under different management.

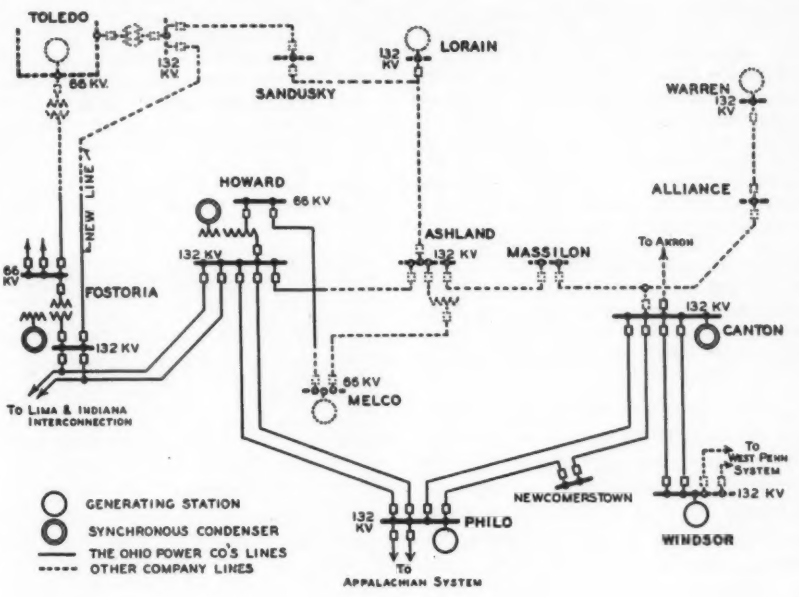


Fig. 3

3. In Virginia and Tennessee, around Bristol and Johnson City, the East Tennessee Light and Power Company and the Tennessee Eastern Electric Company, subsidiaries of the Cities Service Power and Light Company, were operating on an isolated basis. The facilities of these two companies include a 44,000-volt transmission network, soon to be changed to 66 kv, and generating capacity consisting of two hydro plants totaling about 14,000 kw, an 8500 kw steam plant, and other small standby plants. The system was growing and new sources of power supply were needed. Besides, a great deal of dump hydro was going to waste for lack of steam generating system as an outlet. The system of the Appalachian Electric Power Company, one of our companies, was nearby. A joint interconnection study was therefore undertaken. This indicated that an interconnection between these companies and the Appalachian Electric Power Company involving a 132 kv transforming station and a small amount of 66 kv transmission line would provide a very adequate interconnection between these systems for years to come. An interconnection agreement was, therefore, entered into and the facilities to make it a reality are being constructed and will be completed in a month or so.

This interconnection will not only enable the two Tennessee companies to obtain their capacity as their load grows, in small increments, from one of the most economical energy generating systems in the country, but will provide a full outlet for all their excess hydro generated energy. This one item alone will cover substantially all of the fixed charges of the new investment needed to make the interconnection. Further, it will make possible substitution of more economical steam generated energy than is generally possible in an 8500 kw steam plant no matter how well built. It will provide protection to service in emergencies. In short, it will bring about full coordinated development and operation of the two systems.

4. In 1927 the same Appalachian Electric Power Company made an interconnection with the Carolina Power and Light Company at Kingsport, Tennessee, and at the Virginia-North Carolina State Line near Roxboro, North Carolina. This materially strengthened both systems; permitted economy interchange between the two systems, one of which was predominately hydro and the other steam, and for a period, when faced with a shortage of capacity, allowed the Appalachian Company to purchase firm capacity from the Carolina Company. During the depression years a new arrangement, involving no firm capacity, was developed, which continues in force. This arrangement provided mutual back-up capacity and made available large amounts

of dump hydro for replacing steam generation on the Appalachian system. During 1934, this interchange amounted to nearly 450,000,000 kwhr. Great as is the dollar value of this one product alone of the interconnection, it represents by no means the largest value. For under this agreement, off-peak steam energy is made available to the Carolina Company. Through this arrangement Carolina has been able, in effect, to store excess hydro energy in the coal piles of the Appalachian Company during high water periods and draw upon this storage during low water periods. During the last two years this has made possible the firming up of Carolina's hydro capacity during times of low water, thus saving the operation of their steam plants.

All of these are without doubt splendid examples of what can be done by any power group applying itself sufficiently to the solution of a technical-economic problem as difficult as interconnection. They are particularly revealing of the dollar and cents yield or return that can be obtained from an investment in interconnection. And, examined from the angle of its double duty —that is, its duty to the public for whom it provides facilities, and its duty to its bondholders and stockholders whose money furnishes the wherewithal for the facilities—from this angle, no utility company has a right to proceed with a facility unless the prospective return is adequate. It cannot, and has no right to, indulge in any grandiose schemes of interconnection because they fit so well into a preconceived paper picture of how a group of systems ought to be coordinated. Nevertheless, it must be recognized that too narrow a view will frequently not show all the return that is in sight. There frequently are cases where the immediate direct return does not compare in value or significance with the system benefits obtainable during extraordinary emergencies. Three examples of the achievements of interconnection over the last two years, on our own system, will bring this out more clearly:

1. In March 1936, the entire Ohio River Valley, especially in the upper region, was subjected to a severe flood. At Pittsburgh, where for example, the flood stage reached some five feet above that of the all-time record of 41 feet in 1763, all the major power plants were put out of commission and this was true of the entire upper valley region. During this time, interconnection made it possible for The Ohio Power Company to turn over the entire Windsor Plant, which stood up, and which is jointly owned with the West Penn Power Company, to the West Penn Power Company to replace the capacity lost by this and other interconnected companies. Additional power was fed to the stricken area by The Ohio Power Company through its interconnections at Canton with the Ohio Public Service Company and the Ohio Edison Company. At the same time other companies interconnected with The Ohio Power Company stood ready to furnish additional capacity up to 100,000 kw. While we ourselves lost no plants on our own interconnected system, some of the areas supplied by the system were hard-struck by the floods but in each case we were able to maintain full service in those areas and furnish all the help needed by the companies interconnected with us.

2. In January 1937, another flood occurred in the Ohio Valley but in this case while the upper region was not seriously affected, the flood in the lower valley region was unprecedented. On our system the sections around Huntington, West Virginia, Ashland, Kentucky, Portsmouth and Ironton, Ohio, were particularly hard-struck by the flood. It was necessary to shut down the 40,000 kw plant at Kenova (near Huntington, West Virginia) which normally serves this local area. However, as the result of strong interconnections with other parts of the system, service was available at all of these points. Farther down the river at Cincinnati, all power plants were out of commission and our companies were part of an interconnected group which supplied power to Cincinnati during this emergency.

3. In July 1935, our 85,000 kw Glenlyn Plant in Virginia was suddenly put out of commission by a local cloudburst. It required some 100 men about a week to get this plant running again. In the meantime customers in this area were not affected in any way, since strong interconnections with other parts of the system made it possible to carry on without this plant.

In each of these three great emergencies interconnection came through with flying colors and saved the service. It did that because the interconnections were not half-hearted and because the systems had been operated for years with that end in view. Perhaps the monetary value of being able to do this is a little harder to estimate. But, can anybody overestimate the value of the gain in good-will, of the gain in confitence—even in affection—of a community, that comes from sustaining it in a period of emergency like a flood?

The cases cited from our own experience have been matched by dozens of other cases on other systems, but I have purposely limited myself to the range of our own experience. But all of them prove that by developing the idea and consistently following the philosophy of operating interconnected, it is quite frequently possible not only to make capital and operating economies, but, in many cases, to provide against catastrophies and contingencies and maintain service under conditions frequently never even envisioned.

In all of this it ought to be pointed out that no long distance transmission of power is involved. Those who have closely studied the problem of transmission and thoroughly understand the economics of power supply, know that there is no sound economics in long distance transmission of power. On the American Gas and Electric Company system, for example, the actual mean weighted distance of transmission under normal conditions in the nine states over which the system extends, is less than sixty miles. The economies pointed out above were accomplished, therefore, without doing violence to that fundamental of relatively short transmission distance. Further, these examples definitely bring out the very important principle of sound system planning which interconnection and operating interconnected makes possible, namely: that after having provided against almost every conceivable emergency that can occur in the business and in the great responsibility of operating a utility system, it is highly desirable and, in many cases, almost necessary, to provide against contingencies wholly inconceivable and unpredictable, and that in general can economically be provided only by interconnection.

IV. A Course of Action

Granting that the ideas developed above are substantially sound and have real merit, what is there to be done? How does one go about developing an interconnection that does not exist? Under what conditions ought it to be explored and what are the things that have to be investigated, and how is that to be carried through?

It must be admitted that these are the most pertinent and at the same time most difficult questions. But it may perhaps be of benefit to clear up again a negative point, that is, one having to do with the improper course of action. First and foremost it needs to be emphasized that interconnection—interconnection under proper conditions—is more than merely a problem in the purchasing of a block of energy. It is more than a few mere kilowatts and kilowatt-hours.

On an affirmative basis this can be said: Whenever any system finds itself up against a planning problem, that is, a problem involving the planning of additional capacity either in the form of additional transmission facilities or in the form of additional generating facilities, or confronted with the problem of firming or improving the service to any particular district or area, or whenever it is confronted with the problem

(*Continued on page 263*)

Safety Pays Big Dividends

By W. E. Mitchell

Vice President and General Manager, Georgia Power Company

An Address Before the Fourth General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Ill., June 3, 1937

WE Americans are notoriously careless regarding human life. The record of the deaths and injuries on our highways from automobile accidents is one to make any thinking person shudder. Nor has our industrial record been much better. It is an old saying that our transcontinental railroads cost a life for every tie. Twenty years ago it was an accepted rule on dam and power house construction that you'd have a man killed for each million dollars of construction. Linemen's work was notoriously hazardous. The number literally burned up was terrible.

Well, fortunately, we've become somewhat more civilized in these later years. No longer do we look upon accidents as a matter of course—as something that can't be helped and that must be accepted as an inevitable part of the business.

What brought this change about? An enlightened social consciousness, leading to adequate workmen's compensation laws, may have had something to do with it. Let's hope it did. But a far more important factor was a realization of the economic waste—the actual dollars and cents lost through needless accidents. The pocketbook nerve is still the most sensitive one in the body corporate of business. Despite increased taxes and the higher wages, the main business of business is to provide needed and useful services at a profit. I hope to show that a sound, sane safety program will pay big dividends. Unfortunately in a good many industries "Safety First" has ceased to be a slogan and has become a fetish. High pressure swivel chair safety directors with mahogany desks, files and records world without end, men who know a lot about psychology and social values from books and nothing about real work, production and what the normal working man is thinking about are in numerous instances wasting a lot of good money and to say the least, not helping the movement.

Why have a safety program?
What constitutes a sane safety program?
What can it accomplish?
How far should it go?

Many books have been written on the subject. I can tell you little that is new. But even old lessons bear repeating. Human nature is very prone to forget and prone to slip back.

MR. MITCHELL

Men as individuals are like business. The pocketbook appeal is the first among many reasons why they work. There are many risks and many opportunities for accidents in any business employing men. These accidents cost money and are an economic waste aside from the needless human suffering. There are many hazards peculiar to the public utility business with which I am most familiar. The training of men in safe practices and the avoidance of accidents has we believe fully justified careful organizing, careful training and sustained follow-up in safety as part of the regular duties of all employees.

Perhaps the most important thing about a safety program is that it is habit forming. It forms habits of the right kind, and therefore it builds character and makes better men.

A man who has become conscious of "tripping hazards," by reason of his company training, doesn't leave a pile of rubbish or an empty bucket on the dark basement stairs in his home. Automatically, he puts the bucket or the trash where it ought to be. It has become a habit. He does it without thinking about it. It has become almost reflex action for him to follow correct safety practices in all of his life.

The reflex functioning is one of the most amazing things about the human body. We can do some things by conscious thinking; but we can, and do, do many more things through our reflex nervous system. In a body that is healthy and functioning properly, the brain occupies a position like the top executive of a big corporation. He formulates policies, he attends to unusual and extraordinary problems that arise. But all of the details are attended to by his subordinates. He doesn't have to bother about the routine, but is free to consider the bigger problems. So, with the body, the reflex system looks out for the details, attends to the routine, and leaves the brain free to handle the job of thinking.

The reflex system attends to the job of breathing, digesting of food and similar functions, and does it very cleverly. We don't have to teach it how to do those things. It knows them when we are born. But the reflex system will also take over a lot of other jobs and attend to them, too, if we will only give it a chance. When we form a habit, we have turned over to the reflex system a job that the brain would otherwise have to attend to and bother with. And once the habit is formed, the reflex system will do the job better than the brain can do it.

Avoiding things that hurt us or other people (safety practices) is certainly something that is important to each of us. It would seem that everybody would learn this habit in childhood, and would have this habit as one of his assets for the rest of his life.

If everybody did form this habit in childhood, there would be no need for safety programs. Unfortunately, very few people acquire it in childhood. A great many grow up with the contrary habit of carelessness, thoughtlessness, indifference to the safety of others. That is why safety programs are needed. With such people the program arouses their interest in safety, starts them to thinking about its importance, causes them to become aware of their own bad habit of

carelessness, provides constant reminders to keep the brain working along the proper lines, offers recognition and rewards for good practices and punishments for bad practices, impresses the idea deeper and deeper into the man's mind until it becomes a part of him, and, finally, it has become a habit.

The company that does this sort of thing for its employees benefits them, as well as itself. An employee who has cured his bad habit of carelessness and acquired a good habit of carefulness will acquire other good habits. He is a better man in every aspect of his life—as an employee, in his home life, as a citizen.

No company need apologize for its safety program. In fact, it is the duty and obligation of a company to take the leadership in activities of this kind from which the employees benefit.

The sharp reduction in accidents that was made in the first few years after our company inaugurated its safety program, even in the first year, was undoubtedly due primarily to the fact that the company had demonstrated that it cared whether accidents happened or not. In that first year, comparatively few of the men had had time to break careless habits and acquire safety habits. Not a change in individual habits, but a change in the company's attitude brought about a sharp reduction in accidents in a comparatively short period of time.

All of us want to feel that somebody else cares about what happens to us. Children will go out and hurt themselves deliberately, if they feel that they have been slighted. Grown people don't do that very often, but they can be mighty careless about themselves if nobody else cares about them. If the company is indifferent to the men's safety, they are likely to be indifferent to their own safety.

Before our safety program was launched, the men had a right to believe that the company didn't care whether they got hurt or not. They probably never thought it out consciously, but the company's attitude influenced and affected their attitude. Slackness and carelessness were widespread, simply because safety and carefulness were not being promoted, and an enormous number of accidents occurred.

Lack of a safety program not only denies the company and the men the good results, but the lack of it produces bad results. No company can afford not to have a proper safety program.

My knowledge of this subject is based largely on twenty-five years' experience in the South with just two public utilities; each supplying service to cities, towns and rural communities scattered over an area of approximately 50,000 square miles. The problem of developing safe practices is more difficult under these conditions than where the personnel is concentrated in large groups in relatively small areas.

The foreman is the key man in any safety program, but he'll never truly enter into it, nor sell his men on it unless the superintendents, local, district and division managers and main office supervisory staff, clear up to the general manager and president, are also thoroughly sold on the worthwhileness of it. Therefore, a sane safety program must be organized from the top down.

Why Teach Safety?

To put it on the lowest basis—it saves your company real money. Reduction of accidents reduces compensation for lost time. Safe workmen are better and more efficient workmen.

Has it ever been your job to work for several hours futilely trying to resuscitate a fine young lineman and then, knowing in your heart it was an unnecessary accident, have to go and break the news to a poor, frightened, crushed young woman, whose only means of support was that man? Unfortunately, that has been my painful duty a number of times. If nothing else had done so, this would have made me a firm believer in safe practices.

The workman naturally grows careless. Familiarity may not breed contempt, but it does dull the sense of danger. Mere talk won't rouse him. It's the foreman's job to watch out for him. Also the helpers. His best protection is thorough training in the fundamentals of safe methods of work. Then habit and instinctive reflex action may save him in a tight.

All an organization needs to get started off is a Safety Council consisting of department heads with a president who genuinely believes in the work and is an official of standing in the company, and an alert young man, who is familiar with the company's operations, can meet and talk on the level, and not down to foremen and men, to act as secretary or director. Of course the secretary must be enthusiastic, must believe in the worthwhileness of the program and be capable of developing and handling more and more work, for assuredly it will grow in importance from year to year if properly directed.

Quarterly meetings of the general Safety Council may be sufficient if the division, district and local groups are properly organized. Foremen and crews working out of the same headquarters should meet at least once a week on company time for one hour. At these meetings, a foreman or superintendent should take up at least one definite phase of safety work. The most recent lost time accident and how it might have been prevented can always be made productive of real live, worthwhile discussion once foremen and men appreciate that their ideas and suggestions will be carefully considered. A talk by the president or general manager, particularly after a long siege of fighting trouble, such as followed the sleet storm of January 1, 1936, on our properties, or after a particularly bad accident, to let the men know their work and loyalty are appreciated and that the company is still solid for safety, is very helpful.

Definite, practical training in first aid and prone pressure method of artificial resuscitation should be carried out by every line and substation crew and by all operators, metermen and appliance service men. In our company all men in these groups, totaling approximately 2500, have had such training. Over 900 have received the Red Cross certificate for having completed the Red Cross standard First Aid Course, which involves fifteen hours of special instruction.

A trophy, named in honor of our vice-president, the Frank L. Butler trophy, is competed for by the six divisions of the company's electric operations. It is awarded on the basis of lowest per cent of loss time accidents to total man hours worked. The honor of winning it is highly coveted. In the Transportation Department, the trainmen's section worked 4,500,000 man hours between December 16, 1932, and May 7, 1936, without a single lost time accident. Over 600 men worked over five and one-half years without a lost time accident in all the hazards of traffic on Atlanta's crowded, narrow, crooked streets. The automobile, bus and truck garage men, with some 40 employees, have now worked 1,066,781 man hours; over seven years without a single lost time accident and are still going strong. In the past ten years a great reduction has been made in fatal and serious accidents. This didn't just happen.

A very necessary adjunct of our safety program has been the preparation of a Foreman's Handbook or Manual of normal operating practices with refer-

ence to getting clearances, handling cases of trouble, first aid, standard line equipment, etc. Definite rules covering testing and use of rubber gloves, handling of hot lines, the use of "pigs," rubber blankets, and other protective equipment on hot work, are set forth in clear, simple language. Foremen are held strictly responsible for the condition of all tools, winches, brakes and equipment on their trucks. All rubber gloves, linemen's safety belts, climbers, etc., must be checked and tested regularly. Inspection and checks at irregular intervals by general foremen or division superintendents have a salutary effect in keeping everything in jam-up shape.

Every serious accident is promptly investigated by a committee, the majority of whom have no direct responsibility for the work where the accident happened. In this manner a more impartial, thorough and prompt report of the actual causes of the accident is made. It is also this committee's duty to make specific recommendations that will prevent a recurrence. This report is mimeographed and sent to every division, where it is made the subject of discussion, and believe me, these discussions are free and frank. Many a foreman who thought he had no responsibility and that the accident couldn't have been avoided, changed his mind before the "court-martial" was finished. An impartial, thorough investigating committee can usually find the true cause of every serious accident. The important thing is to prevent a recurrence by a thorough explanation and discussion of the accident with all other crews liable to be caught in similar circumstances. Firm, prompt penalties for carelessness or infraction of safety rules are applied. In our business the foreman's first duty is the safety of his men and it is our endeavor to never let him forget it.

In regular quarterly operating practice meetings where all phases of the company's operations, such as rural line specifications and construction, cost of fuse replacements, servicing customers' appliances, unnecessary automobile expense, high line and substation maintenance methods are discussed, safety and safe methods of doing difficult and hazardous jobs are discussed by foremen as much as by engineers and their effect upon costs brought out.

A vice-president in a large bank left for a position in another city. A man went to the president to apply for the job. The latter's answer was something like this: "Why when we replace a vice-president, it means we hire an office boy." In a good, well organized company, this ought to be the rule. If the rule, then a great deal more care should be used in hiring that office boy, clerk, lineman's helper, and apprentice engineer. He should not only be sound in wind and limb, but he should be intelligent and preferably he should have at least a high school education. Logically then, a thorough medical examination and approval by the company physician should be a prerequisite to getting on the company's payroll. The beginning of safety is to avoid hiring the incapacitated or unfit. Your company has saved a large, even though it is an unknown amount, when you rigidly follow the doctor's recommendations as to physical fitness. Picking men for the job, not just hiring any Tom, Dick and Harry, is saving the company money. You should figure that you are hiring a man for many years of service, the company is going to invest time and money in training him, and will incur definite obligations to him, which obligations grow greater with each additional year of service he renders the company.

But a sound safety program won't stop with the initial, or shall I call it entrance medical examination. A sick workman can hurt himself, or hurt his buddy with the greatest of ease. A sick man will do less and do poorer work, but you are paying him just the same. Some years ago, we commenced giving a free medical examination once a year to all trainmen over 40 years of age. We found an astounding number with rather serious disabilities, such as defective vision, hernia, high blood pressure, defective teeth, etc. These men were advised, unless the disability was such as to constitute a positive hazard to the public, that they would be continued on their regular jobs, but they would be expected to do the necessary to correct the situation. Now these men look forward to their annual check up and willingly follow the doctor's recommendations.

ANNUAL HEALTH EXAMINATIONS—OPERATING DEPARTMENT FIELD EMPLOYEES OVER 40 YEARS OF AGE

Summary of Findings

	Year 1934-1935		Year 1935-1936		Per cent Reduction in No. of Men with Defects
	Number	Per cent of Total	Number	Per cent of Total	
NUMBER EXAMINED	355		349		
Defective Teeth	169	47.9	160	45.8	4.4
Defective Vision (uncorrected)	144	40.8	97	27.8	31.6
High Blood Pressure	73	20.1	49	14.0	30.3
Diseased Tonsils	41	11.6	20	5.7	50.9
Kidney or Bladder Disease	38	10.8	25	7.0	35.2
Heart Disease	33	9.3	20	5.7	38.7
Varicose Veins	31	8.8	30	8.6	2.3
Hernia	30	8.5	40	11.5	34.7 (Inc.)
Hemorrhoids	22	6.2	10	2.9	53.2
Syphilis	12	3.4	13	3.7	8.8 (Inc.)
Lung Disease	2	.6	6	1.7	183.3 (Inc.)

For the past three years we have followed the same practice with reference to all outside employees in the Electrical Department over forty, and this year have applied to the office staff as well. A copy of the report is given the employee and the suggestion made that he consult his regular family physician regarding correcting defects. I wanted to see for myself if any concrete results could be shown, so I asked and got the above tabulation of the examinations of the identical men for two successive years.

Do you need any more proof? 30 to 50 per cent improvement in the larger groups. Convert it into dollars. Suppose the average efficiency is improved 1 per cent and there are some 1600 people over 40, it means a saving of nearly $20,000, and the examinations cost less than $5,000.

Someone says that's too paternalistic. I say it's good business. Doesn't the employee spend 60 per cent to 75 per cent of his waking time in the company's service? Does the stipend in the semi-monthly pay envelope discharge in full the company's obligation? I think not. In times of stress, whether from outside political attack, or labor disturbances, the brass hats talk about and want employee loyalty and usually get it, often I think to a far greater degree than they deserve. For after all, what have they done to develop that spirit of loyalty in the employees? Have they ever really thought of him as anything but an economic pawn to provide profits and dividends?

I have attended a good many directors'

meetings. Doubtless you have, too. I've heard many discussions of construction programs and expansion programs, but always from the money side. And if operations were discussed, again it all revolved around money. Why were expenses so high? Would the dividend be earned? Seldom have I heard—Are we treating our employees right? Are we paying them enough? What do they think of their company? The workman is still independent. He doesn't want to be patronized. He has a pride in his job. He is worthy of his salt. I believe it would pay the directors to think more about the employees—to learn what they are really thinking. It would be an excellent safety first measure. It might, like the annual medical examinations, discover some latent ills that could be cured before they became fatal. It might prevent a sit-down strike or save passing a dividend. Yes, we think annual medical examinations for all over 40 are properly a part of our safety program and have paid big dividends.

Another factor in safety peculiar to the South. Our people are notorious installment buyers. The proverbial New England habit of thrift is almost unknown. Now, a lineman about to be garnisheed is not in the frame of mind to be a safe workman, particularly when he remembers that it is a rule of the company that he'll be discharged if garnisheed. What does he do? Why, he goes to the loan shark and then he is in for real trouble. Finally, he gets in so deep he has to come to the company, but usually he is ashamed or afraid to tell the whole amount of his debts. In 1930 this situation had become so bad that the company had made advances of $26,000 to employees, not for company purposes, but to aid the employees. Today the amount of these advances is $2,500. How was this done? By sponsoring eight employees' credit unions organized under Federal charters. We found that the employees' credit committee soon knew the deadbeats and bad risks and it was much harder boiled than the company. They now have so much money that they have difficulty keeping it loaned out. I saw one trainman come in and put $800 in one, two and five dollar bills that he wouldn't trust in the banks into the credit union when he learned it would earn him 6 per cent and be protected by a Federal audit. Did that save the company any money? Yes, and it made better employees. You say, "Yes, but a far call to Safety." No, just a part of the safe and sane program.

Service buttons with the company's motto—"A Citizen Wherever we Serve" —and a star for each ten years' service, are valuable as showing the company appreciates the long years of loyal and efficient service. 2-50 year, 49-40 year, 218-30 year, 646-20 year, and 2262-10 year employees; 3177 employees with ten or more years' service out of a total of 5136, makes for safety and efficiency. If they hadn't been competent, they wouldn't have stayed that long. It demonstrates that they are men of character; also that had the work not been of an attractive type, they wouldn't have stayed long enough to earn these service buttons.

But in spite of all the safety organization, and all the effort to carefully select and train the men, human nature being what it is, and our business being what it is, there will be accidents. Then what? Shall we quit and say there's nothing in the safety business? NO, if we've the right stuff, we'll carry on. A man may make the same mistake just once, if the "juice" doesn't kill him the second time, he ought to be discharged. But what of the men permanently disabled on the job? Here is one of the best opportunities to do a real job. Will you stop with the letter of the law, paying him the exact amount demanded by the Workman's Compensation Act? How you treat this class will have a tremendous effect on all your employees. Do they know that you go way beyond the law, that you try to rehabilitate the man and fit him for some other job? Then they'll say you are a good company to work for and they'll put out as they never will for bare bones naked justice.

Here's what I mean—J. T. was an electrician. In 1927 he cut into a hot cable and was terribly burned about the legs. He was in the hospital for over three years. His hospital and doctor's bills were over $21,000. The company paid them. He received $5,000 in weekly compensation payments over a period of six and one-half years. The company paid for a course in accounting for him. Then he thought he would go in business and asked the company to help him. The company paid him $7,750 additional and gave him a specially equipped used Chevrolet car. This business failed and he came back again for help. Arrangements were made to amputate one leg without cost to him, an artificial limb was provided him, and then we trained him as a trouble clerk and telephone operator, and for the past three years he has handled the job excellently. You naturally would expect him to be grateful, and he is, but better still, he's happy in his work and proud that he can perform some useful service. Was the $25,000 in excess of just doing what law called for thrown away? Every lineman and helper in the company knows how that man was cared for. Recently I had a request from a man writing a book, who knew of this case, asking permission to cite it as showing how the "soulless corporation" takes care of its employees. Expensive, unusual, but good dividends.

Let me read you this letter from Lineman R.

"University Hospital, Augusta, Ga.
Office of Superintendent
Room 338, University Hospital
Augusta, Ga., April 4, 1937

Dear Fellows:

I have intended to write to you for several days but couldn't seem to get around to it. Now since I am well on the road to recovery I have had time to think of things as they were when I was working with you fellows. I still believe you have the best gang of the Georgia Power Co. and am proud to have had once been a member of it. I want to thank each one of you individually for the kind and efficient manner in which you handled me after I was burned. I do not believe it could have been done more efficiently if we had rehearsed it in our safety meetings. Again let me thank you every one for the personal interest and sympathy shown.

The chances are that I will never work in your outfit again but regardless of where it is I will have a personal interest in its activity and in each member individually.

I will probably be in Augusta about two months longer. I suppose you fellows know by now that I lost my right arm and left leg just below the elbow and knee. I will be handicapped to a certain extent but I am still going to be able to do some kind of a job with the Georgia Power Company and wherever I am, I want each one of you to feel that you will always have a broad welcome in my house and on the job. If any of you happen to be in Augusta come by to see me.

Yours as always, a pal,
W. P. R."

That spirit could only be engendered by fair treatment and good working conditions. The accident could not be blamed on carelessness on anyone's part. Hot line maintenance on circuits of 11,000 volts to 110,000 volts is usually considered very dangerous work, but this was the first accident we have had on it in ten years. Careful selection of the men and the foremen, extraordinary care of the special tools and equipment, thorough planning of the work and the doing of the work in sober, quiet atmosphere, with no horseplay or joking, and no unnecessary conversation, careful, quiet in-

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The "Fourth Branch" of the Government

By Bernard F. Weadock

Vice-President and Managing Director, Edison Electric Institute

An address before the Third General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 2, 1937

AMONG the grievances listed in the Declaration of Independence, we find: "He has erected a multitude of new offices and sent hither swarms of officers to harass our people and eat out their substance."

The Constitution of the United States was drafted to protect the citizens of the United States in their person, property and pursuit of happiness. It provided a simple government upon the basis that the best government was the one which governed least. The functions of American Government were established in three branches, namely, legislative, executive and judicial. In Massachusetts vs. Mellon, 262 U. S. 447, 1923, at page 488, the Supreme Court said:

"To the legislative department has been committed the duty of making laws, to the executive the duty of executing them, and to the judiciary the duty of interpreting and applying them in cases properly brought before the courts."

The Supreme Court in the case of O'Donoghue vs. United States, 289 U. S. 516-530, 1933, speaking in regard to the separation of powers doctrine, said:

"This separation is not merely a matter of convenience or of governmental mechanism. Its object is basic and vital * * * namely, to preclude a commingling of these essentially different powers of government in the same hands."

Lawyers, statesmen and publicists have concerned themselves with the present departure from the primary branches of Government lest a despotism be created and perpetuated rivaling in extent the "star chamber" Government of old. This concern is indeed grave, and principally because the arm of the "fourth branch" of Government is constantly growing stronger and mightier; it extends beyond the commonly known regulated industries and into fields of industry and commerce heretofore declared to be private in nature. The electric light and power industry's views upon legal regulation are well known and need no defense.

Some criticism has been directed toward the electric industry for availing

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itself of a right common to all citizens to seek redress in the courts against unreasonable, arbitrary and capricious action of administrative boards. If those critics will read what is here said, they would be inclined to commend rather than condemn our right to assert the privilege of every American—to protect himself against tyranny from whatever source originating.

A committee of the American Bar Association has exhaustively examined the subject and states that there are about 1,300 separate instances of transfer of power to enact laws from Congress to administrative agencies; that is, to the executive branch of the Government and to independent boards and commissions having executive powers. (Report of Special Committee on Administrative Law, American Bar Association, 1936.) The same committee in its 1936 report states that there are 73 Federal Tribunals exercising judicial power in 267 classes of cases. (1936 Report, American Bar Association.)

President Roosevelt, realizing existing conditions in the executive branch, appointed a committee to consider the problem of administrative management in the Federal Government. That committee has made its report. The committee found that there is now in the Government of the United States over 100 separately organized establishments and agencies presumably reporting to the President. Among them are the 10 regular executive departments and the many boards, commissions, administrations, authorities, corporations and agencies which are under the President but not in a department. (Page 32, President's Committee on Administrative Management Report.) There are also a dozen agencies which are totally independent, creating, in the words of the committee, a new and "headless 'fourth branch' of the Government." (Page 30, President's Committee Report.) This "headless 'branch'" has authority over American industry, trade and commerce, as well as over individual citizens. As some publicist has said, the Government issues regulations prior to birth and follows with regulations until after we are buried. When this "fourth branch" of Government invades the powers of the primary branches of Government it destroys individual constitutional rights. There are well recognized and forceful objections to the further extension of the powers of administrative boards, commissions, administrations, authorities, corporations and agencies.

The legislative branch was created as a forum to consider and debate questions relating to the public welfare and to determine legislative policies and enactments. It was created as a representative of the people, not as master of the people. The legislation when enacted was intended to be in such form as to be readily available and in language easily understood by those required to obey the law. If the legislation is contrary to the principles of fundamental and sound government, we the people exercise our right to select new representatives.

Contrast this long established legislative precedent with the legislation—and I use the term advisedly—adopted by administrative agencies. We find in

these administrative agencies persons of strong bias, prejudice and zeal seemingly desirous to extend their powers and advance their theories and schemes without reference to the mandates of the legislative branch nor respect for interpretations of the judicial branch of the Government. They assert the right to exercise arbitrary judgment upon the constitutional rights of those subject to their jurisdiction. In many instances they are the drafters of their own laws. They lobby them through Congress. They fortify themselves with omnibus clauses which are framed to confer almost absolute powers upon their respective commissions or bodies. They inevitably seek the right of control by "rule and regulation" of the social, economic, and industrial life of the people. As the stalwart Senator Burton K. Wheeler of Montana said in an address before the Tri-State Life Insurance Congress on March 20, 1930, "The demand for Federal regulation will extend beyond the utility group, including transportation and communication, to chain stores, oil and banks, and nearly every line of big business." The Senator described the administrative agencies existing at that time as a "babel of bureaucracy, a citadel of centralized government." *(U. S. Daily, March 20, 1930.)*

Their rules and regulations, orders and pronouncements do not take the form of a uniform law and publicized as such, but in many instances may be found buried in the archives of their commission and remain unknown to the general public. These rules and regulations are, in reality, a borrowing of legislative function in order that by such rules and regulations they may "chisel" their peculiar policies and individual theories into law. If such policies and theories were known to the enacting body, it is questionable whether such authority would ever be delegated. They evade judicial review and constitute themselves not only a court of inquiry, but also a court of final adjudication.

The Right Honorable Lord Hewart, Lord Chief Justice of England, in his book, *"The New Despotism,"* at page 19, speaking of government by administrative rules and regulations, said:

"It is one thing to confer power, subject to proper restrictions, to make regulations. It is another thing to give those regulations the force of a statute. * * * It is another thing to make regulations, behind the back of Parliament, which come into force without the assent or even the knowledge of Parliament. Again, it is a strong thing to place the decision of a Minister, in a matter affecting the rights of individuals, beyond the possibility of review by the Courts of Law. * * *"

In many instances the rules of conduct for business are found in newspaper releases. When the rules and regulations are made, there is no stability nor continuity to them. They may be changed at will and be unknown to those charged with the violation. The commissioners and their staffs owe no responsibility to any constituency. They are not elected, they are appointed. That the regulations are not known to the public required to obey them is best illustrated by a letter of the Federal Alcohol Control Administration addressed to a legal firm which had requested information relative to the powers of the Alcohol Control Administration. Here is the letter:

"FEDERAL ALCOHOL CONTROL ADMINISTRATION
Washington

March 27, 1934

Gentlemen:

In response to your letter of March 21st, we wish to advise that the Federal Alcohol Control Administration was set up by an executive order of the President on December 4th, 1933. Copies of this executive order are not available for distribution to the public, neither have there been made public any court decisions on subsequent orders.

Very truly yours,

(Signed) HARRIS E. WILLINGHAM
Assistant Director."

Yet the individual was subject to imprisonment and fine for disobeying the regulations of which he had no knowledge and could acquire no knowledge. Had these been upon the statute books, the legal firm and others would have known of them.

The President's Committee on Administrative Management, speaking to the same point, said:

"In fact, the bulk of regulatory commission work involves the application of legislative 'standards' of conduct to concrete cases, a function at once discretionary and judicial, and demanding, therefore, both responsibility and independence.

"The evils resulting from this confusion of principles are insidious and far-reaching. In the first place, governmental powers of great importance are being exercised under conditions of virtual irresponsibility. We speak of the 'independent' regulatory commissions. It would be more accurate to call them the 'irresponsible' regulatory commissions, for they are areas of unaccountability. It is not enough to point out that these irresponsible commissions have of their own volition been honest and competent. Power without responsibility has no place in a government based on the theory of democratic control, for responsibility is the people's only weapon, their only insurance against abuse of power. * * *"

An outstanding illustration of the exercise of legislative and judicial functions by administrative commissions is that of the Interstate Commerce Commission. It will be recalled that Congress enacted a law providing for recapturing certain earnings of the railroads. The Interstate Commerce Commission conducted a valuation of the railroads of the country and spent 20 years in time and over $200 millions in public money evaluating the property of the railroads, based upon fallacious theories, but theories desired by those formulating the policy. The commission sought to establish prudent investment as the basis for its valuation and when the question of the exercise of the legislative and judicial power by the Interstate Commerce Commission reached the Supreme Court, the court, in refusing to adopt the theory of the commission, said:

"The report of the commission is long and argumentative. Much of it is devoted to general observations relative to the method and purpose of making valuations. Many objections are urged to doctrine approved by us and the superiority of another view is stoutly asserted.

"In the exercise of its proper function this court has declared the law of the land concerning valuations for rate making purposes. The commission disregarded the approved rule and has thereby failed to discharge the definite duty imposed by Congress. Unfortunately, proper heed was denied the timely admonition of the minority—'The function of this commission is not to act as an arbiter in economics, but as an agency of Congress, to apply the law of the land to facts developed of record in matters committed by Congress to our jurisdiction.'" (St. Louis and O'Fallon Railway Co. vs. United States, 279 U. S. 461-485, 487) (1929).

And yet in the face of this severe condemnation by the United States Supreme Court, we find that the Federal Power Commission, the Federal Communications Commission, the Securities and Exchange Commission, the Federal Trade Commission and other innumerable bodies desire to inflict upon the electric industry, in one way or another, the original cost theory, the prudent investment theory or some other dogmatic or arbitrary theory of valuation inconsistent with and contrary to our established judicial doctrines.

It might be well if the administrative commissions would heed the warning of the United States Supreme Court as contained in the opinion of the court in Southwestern Bell Telephone Co. vs. Public Service Commission, reported in the 262 U. S. 276, and at page 289 the court said:

"It must never be forgotten that while the state may regulate with a view to enforcing reasonable rates and charges, it is not the owner of the property of public utility companies and is not clothed with the general power of management incident to ownership."

and again on page 289, it said:

"The commission is not the financial manager of the corporation and it is not empowered to substitute its judgment for that of the directors of the corporation nor can it ignore items charged by the utility as operating expenses unless there is an abuse of discretion in that regard by the corporate officer."

Another example of an administrative body exercising unwarranted legislative and judicial powers is found in the case of Saltzman et al, Federal Radio Commission vs. Stromberg Carlson, Telephone Manufacturing Company, 46 Federal 2nd, 612 (1931), where the Federal Radio Commission, without notice or hearing, changed the wave frequency of a broadcasting station. This action was contrary to the provisions of the Act of Congress creating the commission. The Court of Appeals of the District of Columbia held the order void and stated that the findings were ex parte, imposing upon the applicant the burden of refuting the case resting on evidence undisclosed to him.

See also the case of Courier Journal Company et al, vs. Federal Radio Commission, Court of Appeals, District of Columbia (1913), 46 Federal 2nd, 614.

The American people have always been free to speak or print their innermost thoughts about the affairs of Government without cringing with fear of retaliation or imprisonment. We have been taught that our most sacred right was free speech and a free press. It would seem that even these rights would be taken from us by the "fourth branch" of Government. The Federal Radio Commission, through Commissioner Harold A. Lafount, on August 14, 1933, issued this proclamation:

"It is the patriotic, if not the bounded and legal duty of all licensees of radio broadcasting stations to deny their facilities to advertisers who are disposed to defy, ignore or modify the codes established by the NRA." (*See, "Not To Be Broadcast," book by Ruth Brindze, page 119.*)

If the "fourth branch" deems it necessary to restrict broadcasting, how soon will it be before it determines that the printed broadcast in the form of newspapers, magazines and publications are proper subjects for its control? Where will our greatest treasures of free speech and free press be?

Senator Burton K. Wheeler, in 1930 stated, "When I speak of power I am not thinking merely of buying power but also the power to control the press, the radio and all other agencies for molding public opinion. . . . " It would be interesting to know how the Senator feels on this subject now since the Kansas Board of Review ordered his speech on a public question deleted from a news picture on the ground that it was "partisan and biased." Can it be that he is willing to let the "babel of bureaucracy," as he described them, continue their control?

Believe it or not, this happened in the United States of America. The Minority Opinion of the United States Supreme Court in the Associated Press case, decided April 12, 1937, sounded a warning and suggested a remedy against this outrageous proceeding, when the Justices said:

"Do the people of this land—in the providence of God, favored, as they sometimes boast, above all others in the plentitude of their liberties—desire to preserve those so carefully protected by the First Amendment: liberty of religious worship, freedom of speech and of the press, and the right as freemen peaceably to assemble and petition their government for a redress of grievances? If so, let them withstand all *beginnings* of encroachment. For the saddest epitaph which can be carved in memory of a vanished liberty is that it was lost because its possessors failed to stretch forth a saving hand while yet there was time."

These boards, commissions, authorities, and what not have resorted to dilatory tactics to avoid judicial decisions upon the question of the validity of their actions and conduct. An outstanding illustration is found in the case of the Securities and Exchange Commission's suspending an Act of Congress by a mere publicity release in order to prevent companies from bringing actions to enjoin the enforcement of the law. The pretense for this action, it is claimed, was to avoid a multiplicity of suits. The Commission by Holding Company Act Publicity Release No. 22, issued November 22, 1935, said:

"In the meanwhile, at least for the immediate future, and until further notice, the Commission does not intend to make any recommendations to or requests upon the Department of Justice for the institution of proceedings to enforce criminal liabilities under the Act. The Commission understands that the Attorney General has sent a circular to District Attorneys setting forth the attitude of the Department of Justice."

The effect of this action was to prevent an early adjudication of the constitutionality of the Holding Company Act and to oust the court and jury of their constitutional functions and leave the Commission free to bring a hand-picked action of its own. There is no record to indicate Congressional approval of this confiscation of legislative and judicial power.

Many other illustrations are available, but time will not permit of reference to them.

While the administrative bodies are confiscating legislative powers from legislators, it is likewise invading the powers reposed by the Constitution in the courts of the land. Constitutional safeguards are persistently disregarded. The administrative bodies constitute themselves a super court without any of the constitutional safeguards of the judiciary system.

The administrative commissions have caused alarm by their continued disregard of the legal rights of the "defendants" appearing before them. The administrative bodies constitute themselves informers, prosecutors, jury and sheriff to execute their orders. The manner of conducting investigations, examinations, inquiries, inquests and studies has demonstrated that the procedure followed is far from even a layman's notion of a fair trial by jury. There is no equality nor justice in the methods employed. The proceedings are usually ex parte without the right of an examination of the alleged evidence or cross examination. The reports are considered confidential and are unavailable to the party being prosecuted. The presiding judge is an employee of the commission. He usually admits what the department desires in the record and excludes any explanation or facts inconsistent with the predetermined theory of the department. One is called to answer charges upon information which is in the custody of the department but not available to the defendant. Gossip, hearsay and even statements of dead men have been introduced in some commissions as proof of the existence of an alleged fact. In making records of cases, the presiding officer has ordered the stenographer to stop taking notes upon objections, arguments or factual presentations by defendants. Frequently off-the-record statements are made; namely, the statement is made but it never appears in print. The reports are prepared with great study to prevent any court review. The courts seldom review issues of fact determined by the administrative body. As is pointed out by the report of the Special Committee on Administrative Law of the American Bar Association, the

courthouse doors are closed to trial by independent judges. (Page 219 of the 1936 report of the American Bar Association.) But hear what the President's Committee said in regard to the exercise of judicial functions by these commissions:

"At the same time the independent commission is obliged to carry on judicial functions under conditions which threaten the impartial performance of that judicial work. The discretionary work of the administrator is merged with that of the judge. Pressures and influences properly enough directed toward officers responsible for formulating and administering policy constitute an unwholesome atmosphere in which to adjudicate private rights. But the mixed duties of the commissions render escape from these subversive influences impossible.

"Furthermore, the same men are obliged to serve both as prosecutors and as judges. This not only undermines judicial fairness; it weakens public confidence in that fairness. Commission decisions affecting private rights and conduct lie under the suspicion of being rationalizations of the preliminary findings which the commission, in the role of prosecutor, presented to itself.

"The independent commission, in short, provides the proper working conditions neither for administration nor for adjudication. It fails to provide responsibility for the first; it does not provide complete independence for the second."

I do not trust myself to describe the chaos which is certain to follow unless there be some restraint placed upon the "fourth branch" of Government, but I find in the words of the President's Committee my thoughts excellently expressed:

"We have watched the growth of boards and commissions transform the executive branches of our State governments into grotesque agglomerations of independent and irresponsible units, bogged by the weight and confusion of the whole crazy structure. The same tendency in national administration will bring the same disastrous results. That tendency should be stopped.

"It is imperative that we discover some technique or principle by which the work done by our present regulatory commissions, together with such new regulatory tasks as arise in the future, may be handled without the loss of responsibility for policy and administration and without the undermining of judicial neutrality.* * *"

The Lord Chief Justice Hewart in his book, *"The New Despotism,"* on page 43, speaking on the same subject, said:

"The official who comes to the decision is anonymous, and so far as interested parties and the public are concerned, is unascertainable. He is not bound by any particular course of procedure, unless a course of procedure is prescribed by the department, nor is he bound by any rules of evidence, and indeed he is not obliged to receive any evidence at all before coming to a conclusion. If he does admit evidence, he may wholly disregard it without diminishing the validity of his decision. There is not, except in comparatively few cases, any oral hearing, so that there is no opportunity to test by cross-examination such evidence as may be received, nor for the parties to controvert or comment on the case put forward by their opponents. It is, apparently, quite unusual for interested parties even to be permitted to have an interview with anyone in the department. When there is any oral hearing, the public and the press are invariably excluded. Finally, it is not unusual for the official to give any reasons for his decision.

"To employ the terms administrative 'law' and administrative 'justice' to such a system, or negation of system, is really grotesque. The exercise of arbitrary power is neither law nor justice, administrative or at all.* * *"

A good description of administrative action is found in the speech of the Master of Rolls of England, when he said:

"For administrative action generally meant something done by a man whose name they did not know, sitting at a desk in a Government office, very apt to be a despot if free from the interference of the courts of justice." ("The New Despotism" by Lord Hewart, page 145).

As the Supreme Court has said, "To the executive the duty of executing them (the laws)." The Supreme Court has stressed the necessity of maintaining each of the three general departments of government entirely free from the control of coercive influence direct or indirect of either of the others. (Wm. E. Humphrey Executor vs. United States (1935), 295 U. S. 602). A great number of these administrative bodies operate under the executive branch. Their work is best described by the President's Committee on Administrative Management, when it said:

"They suffer from an internal inconsistency, an unsoundness of basic theory. This is because they are vested with duties of administration and policy determination with respect to which they ought to be clearly and effectively responsible to the President and at the same time they are given important judicial work in the doing of which they ought to be wholly independent of executive control." (Page 40, report of President's Committee.)

The political domination of most of these administrative agencies is best described by the Honorable James M. Landis, Chairman of the Securities and Exchange Commission, who in a public address delivered at Swarthmore College on February 27, 1937, speaking of the duties of the Commission, said.

"In the broad pursuit of its policies, to be effective it must align its objectives with those pursued by the executive. The direction in which it moves within the narrow sphere of its activity has in the last analysis to be attuned to the general movement of political thought and will."

Other eminent authorities might be quoted, but it seems wholly unnecessary in view of the well known fact that these administrative agencies do what is desired by the executive, or if not, those in charge must seek other occupations. Accepting this theory; namely, that these commissions are subject to the coercive influence of the executive, results in reposing in the executive legislative and judicial powers never contemplated in our Constitution. The result of this is simply that our rights, our privileges, our liberties and our freedom are dependent upon the fluctuating political policy of the executive rather than the inalienable protection guaranteed to us by the Constitution. As Abraham Lincoln said at Edwardsville, Illinois, in 1858, "Our reliance (against tyranny) is in the love of liberty which God has planted in us. Our defense is in the spirit which prized liberty as the heritage of all men in all lands everywhere. Destroy this spirit and you have planted the seeds of despotism at your doors."

How shall our liberty and freedom be re-established? How shall orderly government be restored? How shall respect for our governmental agencies be preserved? The answer is simple.

The President's Committee on Administrative Management makes a recommendation which would divide the administrative agencies into two sections: one an administrative and the other judicial. The commission also recommends that the judicial section be "wholly independent of the department and the President with respect to its work and its decisions. * * *" (Page 41, President's Committee report.) The President approves of this suggestion of his committee when, in forwarding the report to Congress, he said:

"I have examined this report carefully and thoughtfully and am convinced that it is a great document of permanent importance. I think that the general program presented by the committee is adequate, reasonable and practicable and that it furnishes the basis for immediate action. The broad facts are known, the need is clear. What is now required is action."

The Special Committee on Administrative Law of the American Bar Association in its masterful report makes a similar recommendation. The American Bar Association Committee is composed of outstanding lawyers cognizant of true conditions. Their recommendations are

(Continued on page 235)

Constitutional Regulations versus Govermental Dictations

By Gus W. Dyer
Professor of Economics, Vanderbilt University

Abstract of an address at the dinner meeting of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Ill., June 3, 1937.

MANY things are uncertain in this time in which we live. You can't say it is dull. On the whole, we have been having depressions every ten years for a hundred years and we ought to be getting used to them. We had one in 1828 and in 1837 and in '47, '58, a bad one in '73, another in '82, a bad one in '93, and in 1903. We were getting ready to have one when the World War broke out and that stopped it. Another, a short one, in '21 and then came '29. But this is the interesting thing about all of the other depressions. We had some bad ones, very bad ones. They were very much alike, very similar. But in all other depressions the government confined its activities to its constitutional function and put the responsibility to lead us out in every case where it belonged, on business, and business never failed to come out. And in every case we came out stronger than ever before.

This is the first time that government has ever come in to lead us out, and naturally we don't know whether we are getting out or are just getting into another one. Just now we don't know where we are. It is strange that people say, "Sombody must lead us out." Well, we have always come out without any specified leaders. This is the first time in our history, with many new things, that we ever came to the conclusion that the Constitution of the United States was last year's almanac. We always thought it was for all time.

This is the first time we have ever come out of a depression with an unemployment problem—the first time. Isn't it strange that when we didn't have anybody to lead us we came out and everybody went to work? Now the unemployment problem is with us. If we have ten million people unemployed when times are in a boom, what are we going to have when we have another depression? Congress doesn't know what to do with it. This is the first time we ever came out of a depression with millions of people on relief. We never had that before. Why do we have it now?

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There never was a time in our history when it was so easy for a man to make a living as it is today, if he will go where he can get it and make it. Business is good in many ways, yet there are still ten million unemployed. There are practically as many people in Illinois on relief now as there were two years ago. One person out of every seven in Illinois is getting relief from the government—one out of seven.

We have first one slogan and then another. If one thing doesn't come out right, we go right out and get another one. Now it is electricity manufactured by the government that is going to save the country. So the slogan is now, whenever the administration sees a river or creek or branch, "Dam it. Dam it. Dam everything."

It is, "Dam the gullies and dam the hollows. Wherever you find a hole in the ground anywhere, dam it." That is the cry everywhere. If we keep on the whole country will be damned before long. We haven't a chance to see whether that is going to save anything or not. You have a slogan of Social Salvation by Water Damnation.

The question of the evolution of industry is unusually interesting, because there is nothing like it. I think it would be well for business men to give some time to the study of the evolution of industry. The world has made progress, in the past, in practically every other field except the field of business.

As a matter of fact, the progress in business didn't start until about 200 years ago. The economic conditions 200 years ago were very similar to the economic conditions of the first century. Some of you can remember the old wagons and buggies we used to drive. I suppose wheels didn't change for centuries and centuries. The things we used to drive in Virginia were seldom changed, except to paint them a little differently, perhaps. Why did it start? Why didn't it start before? Who was the first to step out in business? He was a professor, maybe. There were only three classes that talked about business. One was the professor type. Plato was one of them. Then there were the ministers and the politicians.

Then the movement started up about 200 years ago. They felt that things were going to change and the demand for goods was increasing in a small way. They got ambitious in Germany, France and England to facilitate the business development. They got very enthusiastic about it, so the government officials took charge, which was natural. They did not have any business leaders. They had no competition with anybody. They naturally thought that the only thing that could lead the thing was the government. The government had the power, so they did take charge of the mercantile end. The government established banks, built factories and operated them. They even had a soil improvement movement, maybe soil erosion. I don't know that they paid folks for the privilege of improving their soil, but they did it. The government did it. They

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had the strictest regulations. There is hardly a thing that has been done in this country in the last five years that wasn't put into practice, in principle, two hundred years ago.

They limited manufacturing. They could do only so much. The government told them what they could manufacture, what they could manufacture it for, how much, when and where. The government fixed wages, the government fixed hours. The government was in complete charge, especially in France and Germany. It went on for 50 or 75 years.

What was the result? It was a most colossal failure everywhere it was tried. There was no difference of opinion that mercantilism, which meant government direction of business, was a miserable failure in all those countries. That was one reason they populated New England and Virginia about that time. They almost starved to death to get out of it over there. It got so bad in England that they prohibited making beer from barley. It wasn't just prohibition. They couldn't spare the barley. That was the

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time of the French Queen who said, when her people had no bread to eat, "Why don't they eat cake?"

It was a complete collapse. It was so serious that finally the people in England, the so-called Redemptorists, came on to Virginia. Things got so bad there that men would go to the shipowners and sell themselves into bondage for three years or more to be just taken across the water so they could make a living.

That was the result after 50 or 75 years in all three of those countries with governmental ownership and governmental direction of business. The beginning of this system inspired men and women to think. It was the first thing that had been done about it. The government had failed in France. A few Frenchmen, a few successful business men, got together and said, "Let's see if we can't work out a system of business that will bring progress." They came to the conclusion that the fewer restrictions possible from government the better it would be, that industrial progress was industrial freedom. That was taken up by Adam Smith, one of the great Englishmen, and Thomas Jefferson and Madison in this country accepted that philosophy.

In 1776 Adam Smith issued his great book on "The Wealth of Nations." That gave him the distinguished honor of being the founder of the science of political economy. What was it? It was chiefly an exposé of government direction of business. He did it so masterfully and his defense of industrial freedom was so powerful that the world said, "Here is a man who is founder of a new science." The honor comes to him chiefly because he exposed the economic quackery of governmental direction of industry.

The same year Thomas Jefferson gave us the Declaration of Independence, which was the same philosophy. Then the Constitution is the philosophy of freedom. That's what the Constitution is, in every field. It is a brief, forceful expression of the philosophy of freedom in human society. What is the basis of it? It is continually being misinterpreted as the exponent of individualism and lassez faire; that it protects the individual but does not give due concern to general welfare. I don't so understand it at all. Here is the philosophy: that the greatest industrial progress and

the greatest general welfare is obtained through the largest freedom guaranteed to the individual. General welfare was the one objective in every single thing put into the Constitution. There isn't a thing in there restricting the independence of the individual. The individual's freedom is guaranteed, because that theory is that the greatest general welfare comes from free men.

In other words, it is that when you make men free and protect them in that freedom, and put the responsibility on them of directing their lives and directing their business in their own way so long as they don't infringe on the rights of others, they will contribute far more to the general welfare than any government can contribute. That is the foundation theory of the greatest historical document in history.

There are two old philosophies there. One is that you make men free and make men independent. There is another and it is based on science. Is anybody acquainted with the principles of science? There is a law of science that applies to individuals and to society. That is that life comes only through struggle, that there is no advancement in life except through struggle. The man or woman who doesn't struggle doesn't live. The society that doesn't struggle doesn't live. Stay where you are and you move backward. That is the reason that in founding this new government they had the idea that they wanted to build men of character. They thought that the best government for free men is that government which puts the responsibility on them of taking care of themselves. That is independence; that is the philosophy back of it.

There is another philosophy that we are getting more acquainted with that is antagonistic to that. That is the Socialistic, Communistic philosophy. That is based on the same philosophy exactly, with just different methods of bringing it about. It is antagonistic to this theory of struggle. It is based on the idea of doing away with struggle as much as possible, the easy way of life, comfort, and social security being taken care of.

Back of all this confusion going on now in this country I see the struggle between those two philosophies. Will men do more for general welfare if you make them free than they can be driven to do by government? Well, a hundred and fifty years ago we were just a lot of hill-billies in this country. That is the reason George III held us in contempt and didn't think anything of us, or very much. We had no money, no capital. We had no experience in business. We were just a lot of country folks. But we had a Constitution. I don't think any of those fellows could appreciate what that meant. We had something to build upon and we went to work, inspired, enthused by American freedom. The Constitution would protect us. It is wonderful enough to thrill you if you think about it. The American citizen is a sovereign. That is not rhetoric. There is nothing higher among men than an American citizen. However poor he may be, he is equal with everyone else.

They went to work and in a short while Europe noticed that they had a new competitor in business, much to their surprise. It wasn't long before we caught up with them and it wasn't much longer before we passed them. And all at once, almost in a generation, we stood out the marvel of the world, of all times, in that American business leadership was superior, far superior to anything that this world had ever seen. No such achievement has ever been approached in comparison among any people at any time in the world's history. I don't mean achievement in the sense of building cities and making fortunes. I mean achievement in this sense: that under no government anywhere in the history of the world have the privileges and luxuries and conveniences of civilization been taken to the masses of the people as they have been taken under American business leadership under the constitutional freedom of America.

We had no railroads then, we had no transportation that was worthy of the name. Jefferson said that all that territory we got from France west of the Mississippi River wouldn't be needed for a thousand years. It wouldn't, under the old order. But these American freedmen commenced to dream of a transportation system. Was it the government? Oh, no, the government never dreamed of anything like that. No. It was the management of railroads. Little South Carolina had the courage, the first in this country, to try a railroad. They didn't know whether it would succeed or not. It was in 1827 that it started. We started to build them. This great Western territory that was worthless up to that time was taken hold of by American freedmen, acting under freedom, and it was but a few years until they had built railroads across that great territory and added billions of dollars to America's wealth. From time to time some folks talk about how much they made, how much the railroad fellows made. It makes very little difference to me what they made, but I say that for every dollar that they made for themselves they contributed more than a hundred to the general welfare. They built up this country. It was those free American citizens, acting on their own initiative, inspired by constitutional freedom, who built up this great city here and brought it out of the sticks and made this country by far the richest country in the world. It was done largely through that great transportation system. The Interstate Commerce Commission had not been started just at that time. If it had been, I doubt if it would have happened.

Did you ever stop to think that there has never been any more railroad construction since the establishment of the Interstate Commerce Commission? That stopped it. If you want to stop any business put it under government control. I think of nothing that can stop it like government. That isn't an exaggeration. You ask the railroad men about it. The government had the railroads for two years.

The railroads really brought about what is known as the great industrial revolution that made our modern country, made our modern world. It is primarily the product of the application of steam to machinery and transportation. It built up the great cities and added billions and billions to our wealth.

This whole transportation system was the product of an American freedom. As to the general welfare, you can't calculate it. In 1849 the average earnings or annual wage of a factory worker was $238. That was before the time of the corporations. A man had a chance to be somebody. In 1859 it got up to nearly $300, and in 1889 it was something over $300. In 1899 it got up to $400 or a little over. In 1900 it was a little more, and it was a little over $500 in 1909. In 1919, under the masterful leadership (speaking of general welfare, now) of American business men, under the modern industrial leadership, the factory worker was receiving seven times as much a year, practically, as he did seventy years before, or three times, practically, what he had been getting twenty years before.

In 1880 the whole sum paid for public schools in this country was $78,000,000. Last year it was $2,250,000,000 and more. Where did it come from? Why is it that other countries don't spend so much on public schools? Their

industrial systems don't make it. They have to make the money. That is what some can't understand, that it has to be produced before being used.

This is an interesting thing. The amount of taxes paid by the electric power companies in this country last year was more than three times the amount paid for the public school systems of this whole country. The taxes on the electric power companies alone last year would have paid more than the salaries of all school teachers of every elementary and secondary school in twenty-seven of our American states. The general welfare comes in indirectly there.

But coming down now to this second point, the industrial revolution as applied to your industry, let me say one thing. There is one more thing to tell you about government ownership in comparison with private business. The government started in the electric power business at about the same time you did, about fifty years ago. In that fifty years there have been nearly 4000 government-owned plants. Only about 1800 are still alive. Over half of them have been sold out or abandoned. Of the 1800, over half are buying their power from private companies. Between 1920 and 1930 there were 417 generating plants established by municipalities and between 1930 and 1932 three-quarters of them had been abandoned. Not a single contribution came to the science from government-owned plants—practically none. Not a single extension into rural territory was made by any of these plants. The result of that competition side by side with government-owned plants is that 95 per cent of the power is generated by private plants and lines are being extended to every city in the country, down to every town of 1000 and over. Thirty-some thousand towns and villages of a thousand population have their electric current under private direction and private independence.

If anybody in the world who is capable of reason can put those two things side by side and then advocate the government's going into business, it is strange. It is strange even for Germany with all her skill in government. I want to say this about Germany. I don't believe there is greater efficiency in government than in Germany. They went into this business and they sold out. They lost twenty-five millions. They were making a deficit of thirty millions and they sold out to keep from going into bankruptcy through their municipal plants.

I think, ladies and gentlemen, that our eyes are open to these facts. You say, "What about the outlook?" I am not pessimistic. I think we are coming out. If you ask, "What do you think of things now?" I would say I think things are going to become better pretty soon. I have heard people say that they have tried all the wrong roads, they have tried about all the wrong ways in Washington, and soon we are going to get back to solid ground a little later. I think we will. There are several reasons for that.

The idea that people in the country are radical is one that I don't think is true. They haven't been voting for policies. They have been voting for the checks that have been sent to them. They don't endorse policies; they just endorse the checks. When you stop sending those checks, the government knows something is going to happen. That is the reason they don't want to cut down that half billion dollars. You can buy the people temporarily but you can't hold them unless you keep on buying them. It isn't on account of what you have done but on account of what you are going to do. I think a good many people are this way. If I were a farmer (and I live on a farm but don't farm very much) and the government was sending me a check every month, I don't think I would tear my hair to go out and vote to stop those checks. They know that. They are going to stop. They have to stop. That got them into a lot of trouble and it is going to get them into more trouble. If they can't meet the budget when we have prosperity, what are they going to do later on?

There isn't any need of being scared unduly. I think so long as people will fight for a great principle there is no need of being scared, because it will win out. The watchword now is to stand firm and believe we are going to win out on the Constitution. I don't believe we are going to surrender any fundamental constitutional principles. If we do, we will do that which Anglo-Saxons have never done for 1500 years. Let us rededicate ourselves and glory in our spunk and fighting. Somehow I think there is a good deal in that. With the man who stands up and fights (and we have millions of them who are doing it in this country) for great fundamental principles of civilization, there is no question about winning out in the end. It is a terrible price you will have to pay if you lose, but through it all we will gain strength that perhaps will enable us to keep from a greater danger in the future.

The "Fourth Branch" of the Government

(*Continued from page* 230)

entitled to great weight. They drafted a bill which in their opinion would correct the existing abuses. This bill is known as the Logan Bill, Senate Bill No. 273, and has been before the Congress for a couple of years.

The Lord Chief Justice of England, Lord Hewart, in his book, *"The New Despotism,"* gives a more complete remedy for conditions prevailing. His recommendations are:

"1. That the worst of the offending sections in Acts of Parliament be repealed or amended.

"2. Prevent similar sections from being enacted in the future. To accomplish this end he recommends that the state of public opinion be informed of existing conditions and that the electorate be advised of the meaning and effect of statutory provisions which offer at once the occasion and the instrument of despotic power.

"3. That committees of each house provide for their own ranks a voluntary and unofficial committee which would ask themselves, with reference to every measure:

(a) Does it confer, expressly or by implication, fresh powers upon the bureaucracy.

(b) If so, how does it seek to attain that end.

(c) Is the method, or is the probable result, of such a kind that the fresh powers may evade either the control of Parliament or the jurisdiction of the Courts?

"4. That it is highly desirable and by no means impracticable that some * * * of the leading newspapers should regard it as one of the appointed duties of some able member of the editorial staff, * * * regularly and as a matter of course, to subject every new bill to a similar examination. If the bill contains the ingredient which it is desired to detect, to expose, and to destroy, well-timed publicity and well-directed opposition should effect their purpose." (*Pages 148-149, "The New Despotism", by Lord Hewart*).

If these suggestions be adopted, it would restore to this nation the government founded upon the policy of the Fathers and the "headless 'fourth branch'" would be properly checked and bridled.

The Electric Industry Re-examined

By Dean John T. Madden

Professor of Accounting, New York University School of Commerce

An Address Before the Fifth General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 4th, 1937

NINE years have elapsed since my last address before a national convention of the electric light and power industry. Many kilowatts have gone over the wires since that day in June, 1928. The invitation to speak before you today brought back many recollections. Then, as now, I had been engaged in a research project seeking impartially and objectively to determine economic facts of significance relating to your industry. Then, as now, the industry gave me free access to information which it possessed and the privilege also to use and publish what I found. Then, as now, I was under obligation to acknowledge the valuable assistance received from my colleagues, a more complete record of which in the present instance will be made appropriately at another time and in another place.

A few evenings ago, I took occasion to re-read the paper prepared for the Atlantic City convention of 1928 and at the same time I read again an address of mine which appeared in the Proceedings of the Pennsylvania Electric Association in the year 1925. This was before there was any thought of an eight-year investigation of gas and electric utilities by the Federal Trade Commission. Appetite grows by what it feeds on, and I delved into the limbo of forgotten papers and found much additional unpublished material delivered before various group meetings of the old national and geographic accounting sections of your industry. The earliest of these went back to 1922 at which time I called attention among other things to the significant influence which a rapidly fluctuating price level was bound to have upon balance sheets; to the limitations of the accounting process; and to the importance of distinguishing between "real" capital invested and mere "dollar" capital reflected in books of accounts and financial statements. And, as I made a rapid survey of many events which have come to pass during the intervening fifteen years, I was forced to the conclusion that a prophet is indeed without renown in his own land. Some things which have since come to pass were foreshadowed in those old papers and addresses.

DEAN MADDEN

My occasional contacts with your industry have brought me some abuse, even from at least one member of my own guild who has not hesitated to say that I ought to be expelled from the union. In these situations, one can only be patient with his detractors who by innuendo, weazel words, and half-truths attempt to create an atmosphere while still keeping well within the limits of the laws on slander and libel. One is reminded of the story of the member of the crew of a schooner who was signed on by the captain despite the objections of the mate. On the voyage, the seaman was washed overboard with a bucket in his hand. The mate reported the incident to the captain in these words, "That fellow you hired has just gone off with your bucket."

It is distressing to note how many illiberal folks there are among those who have had the advantages that may come from a liberal education. True impartiality and real objectivity are rare qualities. They are, of course, the very basis of justice. How often we find persons of intelligence, including some who serve government, fearful of the truth, unless perchance truth serves the partisan interest. Mark Twain once wrote ironically that truth is one of the most precious things that we have and hence, let us practice economy. The real danger lies in those errors which contain the greatest degree of truth.

Even under the most favorable circumstances many difficulties confront the seeker after truth in the economic realm. In his search for the truth he often finds that he has traveled a considerable distance down a blind alley or the wrong road. He must plod his weary way back again to the cross-roads for a fresh start and resume his journey down another road with the same vigor and patience. When the research involves something that has come fully into the political arena, then reason and common sense frequently take flight. The men seem little interested in economic truth and look to ends. Partisan prejudices may blur the mental vision just as effectively as small opaque lenses held before one's eyes shut out the beauties of an entire landscape.

In democratic countries we select a few men out of millions to make laws. Unless they are wise men and devoid of self-seeking, they can do great social injury. On the other hand, dishonesty, chicanery, or just plain stupidity of entrepreneurs are also too often present. The combination of both is enough to dishearten anyone except an insane optimist. The Master drove the money-changers out of the temple, although it is not recorded that He tore down the temple in doing so. On the other hand, it might also be noted that He flayed with whips of scorn the tribe of Pharisees who greatly outnumbered the money-changers.

The impartial investigator does not expect to find flawless conditions. He is ready to accept the fact that there is an inevitable mixture of evil with the good in all things. But he endeavors to see things and events in their true proportion and perspective. The good as well as the evil must be weighed and evaluated. It is possible to magnify one or several conspicuous evil incidents and poison the public mind just as effectively

as one case of typhoid may infect an entire community. The reformer has his proper sphere of influence but unfortunately some reformers become so obsessed with the evils which they find that they can see nothing else. Reformers of this type can never see any good in the sinner. Someone has said that reform is like a short blanket which when cunningly pulled too far over the head exposes the feet.

Thus it happens that investigations sometimes need to be investigated. Too many reports and investigations in modern times begin with a big wash and end with a little hangout. They remind one of the epitaph on the tombstone of the infant who lived only twenty-four hours—"since I so soon was done for, I wonder what I was begun for." Or they produce a result no more useful than that obtained by Fortescue's man who "sheered his hog and got much cry but no wool." Why is it that so few of the investigations in this country fail to measure up to the scholarly character of the parliamentary investigation in England? When investigations are undertaken for the purpose of political action in the economic realm, they should be searching, exhaustive, and above all, honest. If they do not have all of these qualities, injustice is done. Justice while often tardy, is yet certain, as Amiel has so well put it in his Journal, "in the end, every falsehood has to be expiated, for truth always takes its revenge."

Industrial history records a somewhat similar pattern of development for many industries. They began haltingly and in a small way to produce a new good or service. The initial capital was usually raised on the exorbitant terms exacted in the case of new or speculative ventures. The good or the service was crude and imperfect at first and further sums generally were required for development and experimentation. A market had to be created for the new product which was to claim a share of the limited national purchasing power. But gradually, the new good or service obtained a firm foothold, and those engaged in producing it reaped their rewards. It usually happens also that the great rewards are not enjoyed by the pioneers but rather flow to their successors in interest. Later, there usually developed an era of excessive competition in which the weaker industrial units were forced out and the field left open to a few dominant competitors. In the meantime, expansion forces the new industry to seek additional capital, and it enters the money market. The new capital endeavors to safeguard itself and the elimination of competition and the growth of monopoly ensue. Somewhere in this process of development, the industry comes into that area known as the "public interest." In fact, as society grows more complex, we must expect a large increase in the number of industries which are affected with a public interest. Government begins to take notice; regulation and control follow. Private initiative and private enterprise must first take all the financial risk. When the rewards become significant in amount or where the position of the industry is such that monopolistic profits are earned or are in prospect, or where the public interest is affected, economic development is restrained by public action. I need not mention the numerous examples which will occur to all of you as you recall the history of our leading industries.

The electric light and power industry reached a stage of development somewhere in the early 1920's where the public interest began in some respects to be national in character. The assembly of properties into holding company systems had followed the usual pattern of industrial development in the United States and this was further complicated by the rise of investment trusts holding substantial amounts of utility securities in their portfolios.

In 1928, at the request of the National Electric Light Association, I made an investigation of the growth of holding companies in the United States. This information was presented to the United States Senate Committee on Interstate Commerce during the hearings on the Walsh Resolution in 1928. Unfortunately, the Bureau of Internal Revenue had not compiled statistics from the consolidated tax returns and no information was available from that source. I did, however, make an analysis of the securities listed on the New York Stock Exchange and this study indicated that the holding company type of organization had been largely adopted in all lines of industrial activity.

The importance of the power industry in the national economy was shown by another study presented to the Senate Committee at the same time. Using the capital stock tax returns filed with the Bureau of Internal Revenue for the last year that tax was in force, I was able to get some measure of reliable approximation of the funded debt and capital stock issues of the electric light and power industry in relation to the similar issues of all corporately organized industry in this country. At any rate, gas and electric utilities, exclusive of traction, accounted for approximately 4.68 per cent of the aggregate bonded and mortgage debt and fair value of capital stock at the end of 1925.

It may be possible that my testimony, based as it was upon verified information on file with the Treasury Department, had some little influence in the final decision to entrust the investigation of the electric light and power industry to the Federal Trade Commission. The growing importance of the industry in the national economy as indicated by its outstanding securities merited an impartial investigation in the public interest by a body competent to undertake such a study. The industry had become a significant factor in the social and economic life of the nation and it was bound to become still more influential. If an investigation was to be undertaken, the means and the time should both have been adequate. In addition, few seem to appreciate the fact that your industry is one of the most essential for national defense in time of war.

The investigation which the Federal Trade Commission made into the operations of certain gas and electric utilities pursuant to Senate Resolution 83, embraces more than eighty volumes of testimony, reports, and exhibits. They constitute more than a five-foot shelf of books. The Commission was engaged in this study for eight years; the cost of the investigation to the government amounted to more than two million dollars. The cost to the companies is estimated to have been as much more. During this period of eight years, the Federal Trade Commission issued numerous press releases in connection with the investigation and hearings subsequent thereto. These releases were widely publicized through the press and evoked a considerable amount of editorial comment.

Shortly after the investigation was well under way, the stock market crash of 1929 brought down the prices of utility securities along with others. The break-up of the so-called "Insull Empire" followed soon after, and several smaller groups of companies went into receivership. These events, together with the succession of press releases to which I have referred, served to keep the utility issue in the foreground of public discussion and culminated in the introduction of the Public Utility Hold-

ing Company Bill. The Senate and the House Committees held hearings on the bill and after discussion in both houses, there finally emerged the Public Utility Act of 1935. The investigation of the Federal Trade Commission played no small part in the final result. A tremendous quantity of material was made available to legislators and public officials. Research workers now also have access to an enormous volume of information not previously available.

The public utilities in their turn, in some instances, issued replies to the press releases of the Commission. The Commission criticized some of the practices of the utilities and the representatives of the companies have admitted that regulation might well be improved in a number of respects. Now that the reports of the Commission and the hearings on the Bill are freely available, it becomes possible to appraise and evaluate this tremendous quantity of material. In fact, it becomes necessary for me to say that it is highly desirable, in the public interest, that a study of the investigation be made. This is particularly true since the courts in several cases have been asked to take judicial notice of the Commission's investigation and because books and articles have been based on the material found in the reports of the Commission. Two summary volumes, designated as 72-A and 73-A are extremely important because in the first mentioned volume the Commission has undertaken to express opinions and conclusions as well as to state facts.

It is well known that the presentation of facts alone, even without a statement of conclusions, often requires the greatest of care in order to avoid the creation of erroneous impressions upon the listener or the reader. The story is told of a mate on a vessel, who tipped his elbow too often one day during the voyage, and in consequence, he got drunk. The captain, who was a stickler for *facts*, wrote up the log, entering the note. "The mate was drunk today." When the mate later read the log, he protested to the captain, saying, "You ought not to say that. You know that when we get back to port, the owner of the vessel will read the log and I shall be dismissed and unable to get another berth." "Well," replied the captain, "It's true, isn't it? It's a fact and it's got to stand in the way I entered it." When the mate took the wheel on his watch, he wrote up the log. He entered another fact in these words, "The captain was sober today." Hence, a truthful statement of facts may require some additional explanation in order to produce a correct portrayal of a situation or set of conditions.

It will obviously be impossible for me in the brief time allotted to me on this program to discuss more than two or three important matters touching upon this exhaustive study of the Federal Trade Commission Report. As some of you may know, my colleague, Dr. Herbert D. Dorau (who has long enjoyed a distinguished reputation for his scholarly work in this field) and I undertook to make certain studies of the electric industry in order to obtain and organize information for possible future use by the Edison Electric Institute. We associated with ourselves other economists and qualified assistants in this task. Much of the material subsequently gathered had in our opinion great value for economic study and further research. We sought the permission of the Institute, which was granted, to select and make use of such of the material as would be useful to those who are interested in public utility economics. We had hoped to have some of this published ere this, but circumstances over which we have had no control have delayed the projects somewhat. In the preparation of these volumes, we have not only used freely the material released to us through the courtesy of the Institute, but we have drawn exceedingly heavily on the reports of the Federal Trade Commission. In addition, we have ventured into new and uncharted fields and we hope that our work will merit the approval of those who are competent to judge and appraise these matters, particularly our academic colleagues who are laboring in these fields of applied economics.

These volumes will never be in the group of "best sellers." They are not to be popular treatises, but we do hope that they will be found to measure up to the universally accepted traditions of good scholarship. May I also be permitted to add that the Edison Electric Institute must be absolved from all responsibility for what will appear in the volumes which we are preparing. The authors must assume all responsibility as they cheerfully do. The chips must fall where they will.

I shall therefore confine my remarks at this time to three matters only and these I regret must be treated only too briefly. Specifically, I shall say something about the alleged write ups on the books of utilities; I shall discuss in abridged fashion the investor's experience with public utility securities; and finally, I shall have something to say on the price of residential electric service charged by independent companies, municipal utilities, and subsidiaries of holding companies.

With respect to the subject of write up—it is only proper to preface my remarks with certain comments on the limitations placed on the Federal Trade Commission by the Senate Resolution No. 83. And I do this because I shall later register objections to certain procedures of the Commission.

Senate Resolution 83 placed certain definite limitations upon the work of the Commission. Since no authority was granted to the Commission to value the properties of the utilities, the Commission was perforce limited to the books of account in its investigation of the growth of capital assets and liabilities. The terms of the Resolution also excluded large and important holding and operating companies as well as smaller units and the entire group of municipally-owned companies because the Senate granted authority to investigate only those corporations doing "an interstate or international business" and then only "corporations holding the stocks of two or more public-utility corporations operating in different states and of non-public-utility corporations owned or controlled by such holding companies."

Moreover, as the report of the Commission states, the Senate did not authorize any inquiry into the rates to consumers, or the reasonableness thereof and as the Commission further states, the two subjects thus omitted from the resolution are of great practical importance to the consumer.

The Commission also states that the number of operating companies covered is smaller than seems desirable and that the engineering surveys were much more restricted than seems desirable for a fairly complete picture of the situation.

It will be noted that the Commission was required to report the growth of capital assets and capital liabilities but it was limited to the books of account. This was an inadequate, incomplete, and practically useless method of arriving at results because it would not answer any question upon the reasonableness of the rates charged to consumers or generally the question as to the adequacy of value supporting the securities which had been issued. The utilities had been accused of issuing "watered" stock just as the railroads were charged over a quarter of a century ago. The Interstate Com-

merce Commission had been engaged for some years in making a "nut and bolt" valuation of the railroads and it was well known, even when the Senate authorized the utility investigation, that the final valuation of the railroad properties based on the 1914 price level would be in excess of their capitalization. The results of the valuation of the railroads after many years of work and the expenditure of millions of dollars completely refuted the charge of watered stock for that industry as a whole. There is no reason to suppose that a valuation of the utilities made in 1928 upon the same basis as that of the railroads would have produced any different results. This much then in explanation of the almost futile job which the Senate handed to the Federal Trade Commission.

During the course of the eight-year investigation, the Federal Trade Commission issued many press releases on the conduct of the investigation, particularly on the occasions of the public hearings. In many of these press releases, the write ups on the books of the companies were featured. What impression does the man in the street receive when he is told that the books of a company have been written up? Is it not probable that many consumers would be led to believe that this process resulted in an increase in the valuation upon which the return to the company and the rate to the consumer are computed? How many consumers know the difference between the concepts of "fair value" and "book value"? I venture the assertion that relatively few do know the difference, and the reports of the Federal Trade Commission would, if anything, confuse rather than clarify the distinction. And what is the impression made upon the average investor in public utility securities? To tell him that there has been a "write up" in the property of the company of which he holds a security without at the same time showing him what the effect and consequence of the write up were is at best only a half truth and a half truth is often worse than an untruth.

The Summary table of write ups and inflation published by the Federal Trade Commission in Report 72-A has already been reproduced in books and featured in articles. Its totals were referred to as evidence in the debate on the Public Utility Holding Company Bill in Congress. It will in all likelihood be used repeatedly in the future in public discussion. The extent of the misunderstanding which it has created and will create is beyond measure. But as the gentleman in the brown derby said, "Let us look at the record."

The Federal Trade Commission entitled its Summary Table 33, in Volume 72-A, page 302, as follows: "Summary of write-ups, improperly capitalized intangibles and inflation included in the capital assets of the top holding, subholding, and operating companies at the final dates of examination, and gross totals of such write-ups."

From the first part of the above title one might gather the impression that the table includes three classes of items:

1. Write-ups.
2. Improperly capitalized intangibles.
3. Inflations.

The end of the title, however, refers to the totals of all these items as "gross totals of such write-ups." The term "write-up" is used twice in the title. Apparently the Federal Trade Commission either intended to convey two meanings, one general and one specific, or else it intended "improperly capitalized intangibles and inflation" to serve as a definition but omitted a comma after inflation or the words "that is" before the word "improperly."

The reason for this threefold distinction within the final designation of the gross total as write-ups is not evident. Neither can one find definitions of the terms employed. The impression is readily gained that no one was much concerned about the exact meaning of these terms. In general, the term "write-up" is apparently applied as a catch-all term in the reports of the Commission and in the Summary Report 72-A. The Commission has alleged huge sums as write-ups without stating what a write-up was. This leaves the impartial investigator with but one recourse. He must search through the eighty-odd volumes to classify the allegations so as to ascertain how they are to be classified and their amounts. May I illustrate?

The widest difference in points of view as to what constitutes a write-up is indicated by the question whether a write-up attaches (1) to the asset written up, or (2) to the company or enterprise which writes up the asset. The point of view that a write-up follows the asset wherever it may go is essentially the idea of first or "aboriginal" cost, that is, the excess of value assigned to an asset above its cost to the owner first devoting it to public use, which may or may not have been the present owner, and which may have occurred one year or thirty years or more before the date of the inquiry. Reciprocally, this approach denies all validity and significance (for these purposes) to the cost of the asset to the present owner as distinguished from the cost to the first owner.

The second point of view emphasizes the company owning the asset and centers attention on how the ledger value at which the asset is carried compares with the cost of the asset to the company under examination. A write-up in this sense occurs on the books of the accounting company and is measured from its own cost, not the cost to some other concern. In some instances the Commission in its reports has in fact construed a write-up as eliminated when the proceeds of a sale "at arm's length" equalled or exceeded the appreciated ledger values.

It is obvious at once that the two approaches are fundamentally irreconcilable. The results of the application of either of these standards in the measurement of write-ups would result in sums which would be neither mutually inclusive nor exclusive. The alternate or inconsistent use of either approach can yield nothing but a meaningless total. Failure to use one or the other basis consistently could only result in the addition of unlike items and a total of very uncertain composition and meaning. The total of the alleged write-up used by the Commission is of this uncertain composition and significance to the extent that the write-ups charged are arrived at by the use of these irreconcilable bases.

The figure which the Federal Trade Commission should have set out to determine, as far as possible, was the amount that property devoted to public utility uses increased in ledger value over the ledger value of such property when first devoted to public use other than through the net addition of used and useful assets in the course of expansion and improvement. This possibly was the intent of Senate Resolution 83. After having determined to the best of its ability what this increase in the ledger value had been, the Commission could have determined for Congress and for the public.

(1) How much of the increase represented write up, that is, an actual upward revision of ledger values on a public utility's books;

(2) How much of the increase was due to purchase and sale between interests so affiliated or so substantially unified in interest that the restraint and discipline of arm's-length bargaining were absent and the increase in the ledger values constituted write-ups "in effect";

(3) How much arose out of the purchase

and sale of public utility property among strangers in arm's-length transactions; and

(4) How much of the ledger value that once was actually "write-up" or "write-up in effect" had been eliminated by write-downs, write-offs, or retirement.

By such an analytical approach the Commission could have provided the basis for an accurate and honest appraisal of the social significance of the totals determined. But the Commission did not adhere consistently to either idea. Possibly the examiners received insufficient instructions to guide them. Legal counsel, more particularly Chief Counsel Healy, appear to have favored the accounting approach, that is, the treatment of write-ups as upward adjustments of ledger values over cost to the accounting company, but the authors of Summary Report 72-A, judging by their treatment of the material summarized, seem to have been quite impartial and willing to use whatever approach was easier or resulted in the larger figure.

As it stands, the total of alleged write-up in the summary table of the Federal Trade Commission is meaningless and it should not be uncritically employed in the future by any legislator, scholar, or author. It adds amounts arising from indefensible incidents, to amounts reflecting the results of ordinary well disciplined business conduct having no undesirable social or business consequences. On the other hand, the summary table fails to include all the increases in the ledger value of public utility assets, for the authors of Summary Report 72-A did not include all increases incident to purchase at arm's length. But what is worse in a study put out under the aegis of an agency of the government, is to find the total substantially inflated by duplications. True it is that the Commission recognized this fact in its text, but with the time and funds at its disposal, why did the Commission fail to eliminate the duplications and classify the total in a meaningful way?

Time does not permit me to make a complete autopsy on the cadaver, but I do feel obligated to use sufficient time to show how difficult it is for an impartial investigator to appraise the summary table or write ups from the manner in which it was prepared. I feel certain that Senator Norris would not have employed these totals in his speech in the Senate if he had clearly understood how this table was prepared and what heterogeneous elements were included to make up the gross total.

The Commission was limited to an analysis of the books of account and the results are most fairly appraised from the same point of view. It should be pointed out here, however, that books of account are subject to all sorts of errors of omission and commission. But apart from this consideration, the Chief Counsel for the Commission during the hearings at least, appears from the record to have been firmly convinced and most consistent in his position that write-ups must be related to the company, that is, the accounting point of view. I can not point to any positive expression of the principle, but the Chief Counsel did on a number of occasions take a definite position to the effect that cost over vendor's ledger value in arm's-length transactions is not a write-up.

Neither will time permit me here to review the possibilities and limitations of accounting as an instrument for telling economic truth. A write-up or a write-down constitutes a break in the historical continuity and integrity of the accounting process. If cost in dollars gives way to valuations reflecting appraisals or mere opinion of value, the continuity of the record based on cost is broken. This continuity is naturally and unavoidably broken when an enterprise is dissolved or its assets sold at other than original cost value in an arm's-length transaction. But it must be remembered that the true value of the assets is not an issue in either case.

It may also be pointed out briefly that even though there was a transfer of assets from one affiliated enterprise to another, in the absence of arm's-length bargaining, at prices higher than the seller's ledger value, it does not follow that the transaction necessarily resulted in over-valuation. Such write-ups "in effect" as well as write-ups in fact are not evils merely because they fall into the category of write-ups from the accounting point of view. Moreover, the identification of an incident either as a write-up in fact or as write-up "in effect" constitutes no passing of judgment on the merits or justification of a transaction. Had the Federal Trade Commission investigation made an ascertainment of value (which they were not authorized to do) or even determined the most useful evidences of value, cost, cost of reproduction and depreciation, economic tests of the propriety of write-ups or write-ups "in effect" could have been applied. What I wish to point out is that there is no warrant in saying, "if it is a write-up, it is an abuse." The whole of the Federal Trade Commission investigation affords no basis for the implication that because a transaction was a write-up it was bad or that it had any undesirable social consequences simply because it was a write-up.

There is also one other point relating to the summary table of write-ups that will be of interest to economists and the public and that is the fact that the write-ups were not computed as of the same date. The final examination dates of the investigation differed with the several companies and yet these individual totals derived at several different dates were all included in one conglomerate total. Again one wonders why, with the time and money available, the Commission did not avoid such a statistical sin.

But we can not yet leave the subject of write-ups, incomplete and all-too-brief though the treatment must be in this address. The mere listing of write-ups or the mere classification of them on the asset side of the statement is only half the story. What happened on the liability side? How much of the heterogeneous total of one and one-half billions were credited to reserves which were in effect valuation reserves and thus practically offsets? How much of the total was credited to capital surplus? How much was credited to surplus available for dividends? How much was credited to the capital stock account and remained "within the system"? How much appeared on the books of account but was in fact eliminated in financial statements issued to the public? In brief, what was the net effect and consequence? The Commission has not supplied any summary table revealing answers to these and other pertinent questions. The impartial investigator must dig laboriously through the volumes and be prepared to analyze critically more than 600 allegations of write-ups comprising approximately 1000 incidents which were included in Summary Report 72-A and about 200 incidents not so included, aggregating almost 2,500 items, if he is to arrive at answers to these most vital questions. Moreover, the investigator must work under the disadvantage of no access to the records of the companies or to the working papers of the examiners. He must rely upon what the Federal Trade Commission Examiner saw fit to report. In addition, the investigator must check the report against the testimony in the hearings in all cases because the answer to a problem is often developed only in that way. If the Commission deemed it appropriate to prepare a summary table of write-ups as they affected the assets, it should have felt

compelled also to make a similar computation to show the effect and consequence on the liability side. This the Commission did not supply.

From the foregoing analysis it becomes evident that the real story of the write-ups still remains to be told. Whatever it may reveal that is favorable to the utilities will only be tardy justice. But whatever one's point of view may be on the subject of public or private ownership, on the advantage or disadvantage of holding companies, or on any other moot question in this area of social and economic life, we must sincerely regret that the Commission left so much to be desired in its investigation of write-ups. But I might mention other omissions. For example, one wonders if it occurred to the economists of the Commission to analyze the write-ups by years for the purpose of studying the correlation of write-ups with the fluctuations of the price level during the same period? For it is a fact that write-ups similar in character to those found in the gas and electric properties took place in every other field of industrial activity. In the exchanges of properties which took place during the two decades from 1914, were the officers and directors consciously or unconsciously influenced by the violent shifts in the price levels which characterized the period? The electric industry can not be studied independently of the economic forces which it influenced or by which it was also affected. It is easy to understand why a utility executive should testify that he did not know in 1935 why write-ups took place since they served no useful purpose in rate making. How many of us have a scientific economic explanation of the things we do at the time we do them? And shall presidents of business organizations be put in the pillory for honest economic mistakes when the President of the greatest business in the world boldly announces that he and his board of directors expect to make mistakes?

Although the term "write-up" has not been defined officially by the Federal Trade Commission, we know what has been construed a write-up by the nature of the incidents so designated in the reports of examiners or in the Summary Volume 72-A. The more important types of entries and transactions so treated are:

(1) Increases in the ledger value of fixed capital on the books of the owner company, sometimes substantiated by an appraisal, or again substantiated by an estimate of worth made by the directors of the company;

(2) Increases in the ledger value of fixed capital when purchased by one company at a price higher than its value on the books of the vendor. Many such increases occurred in arm's-length bargaining between unaffiliated parties as well as between units of the same utility system;

(3) Water rights written up in value when it was discovered that they were suitable for the generation of electricity and thus more valuable as motive power than their value in turning the old mill wheel;

(4) Land written up in value when it was discovered that the management had guessed correctly and that oil and gas actually lay beneath the surface of land bought or leased as wildcat acreage;

(5) Allocation of such factors as overheads, development expense, fees, interest during construction, and other items. The record does not show what the special qualifications of the examiners of the Commission were (other than the fact that they were employees) to pass on the propriety of the amount or accounting treatment given. At any rate, if the examiner-employee differed in his opinion from that of the management as to the appropriateness of a charge or the propriety of the amount, the excess of the directors' estimates over those of the examiner were treated as write-up;

(6) Taking up the earnings of subsidiaries into the parent company's surplus account, thereby reflecting the increase in the value of its investment, without the formal declaration of dividends by the subsidiaries. Even though the subsidiaries were wholly owned, yet the amount involved was often treated as a write-up;

(7) Failure to retire at once property, which it was subsequently decided would be of no further use. The value of the property temporarily held for final disposition was treated as a write-up. Thus write-up may mean failure to write down in accordance with the opinion of the examiner;

(8) Canceling an open account due from a subsidiary and transfer of the amount due from the accounts receivable to its investment in the property was termed a write-up;

(9) Annual revaluation by a holding or investment company of its minority holdings of securities in its investment account to reflect the market prices at which the issues were being traded on the regular stock exchanges was treated as a write-up;

(10) In some cases, changes in fixed capital values were charged as write-ups after deducting the increase in retirement reserves which often accompanied a write-up in fixed capital. In other cases, the amount charged as a write-up took no account of such an increase in reserves;

(11) In some cases, the gross debits of a revaluation in an investment account were charged as a write-up ignoring entirely credits by which the same investments were written down, and even though the asset written up was subsequently sold and the alleged write-up realized in cash;

(12) Some write-ups charged to the utility systems at the date of the Commission's examination occurred half a century ago, thirty or forty years before the property involved became a part of a holding company system and despite the fact that the original property had probably long since been retired and replaced, and despite the fact that some of the properties had been sold in arm's-length transactions before becoming a part of the system now charged with the write-up.

But I shall not prolong the list. Enough has been said to show that if any true picture of the situation was to be presented to the Congress and to the public, the form of summary used by the Commission in Report 72-A was just the way it should not have been done.

In addition to the foregoing, there are other errors in the summary table published in Volume 72-A, and referred to by Senator Norris in the debate in the Senate on the Public Utility Holding Company Bill. The errors are difficult to explain as simple mistakes. One readily gathers the impression that the desire was to increase the total of alleged write-ups as much as possible.

There is, for example, the incident of a write-up of $6,428,637 and a write-down of $7,207,300. Both are mentioned in two sentences in the same paragraph in the report of the examiner. But the summary table includes the write-up while entirely ignoring the write-down. Was this a simple mistake?

There is another instance where several transactions are mentioned in an examiner's report—it is true they are somewhat involved, but nevertheless, not too intricate for one who was to be entrusted with the responsibility of preparing an important report to the Congress—in which the write-up is alleged as $8,667,449, but was actually $2,150,651.

To add to the variety of the incidents, mention should be made of a write-up which had originally taken place on the books of the company but which subsequently disappeared because the assets written up had been disposed of before the final date of examination by the Commission. Nevertheless, a write-up of $825,089 is included in the summary table.

If you owed a debt of $10 and if your creditor was anxious to have the cash before the due date and offered to settle for $7, and you had the money to pay him, you would probably consider it a good business deal and complete the transaction. You had made a gain, or a profit of $3. But this was not the attitude of the Commission's examiners in the case of a company which reacquired some of its own bonds in the open market at a total cost which was $420,687 below the par value of the bonds. It entered the bonds on its books for their face value and credited surplus with the difference. It is nevertheless charged with a write-up in the summary table of the difference between cost and the par value of its own

bonds which it had picked up at bargain prices.

Not all reported incidents of write-ups found their way into the summary table but in spite of these instances, the authors of the summary managed to get in an excess amount through error. To show the analysis required to check the figures of the Commission, I shall illustrate with another case.

A company is charged with a write-up in a certain transaction and the amount as computed is the new gross amount without deduction for depreciation reserves, less the old ledger value taken net after deduction of reserves. This failure to deduct depreciation reserves in both instances results in an overstatement of the write-up of $377,087. Reading further in the report, one discovers that the cost of the properties to the acquiring companies was some $963,241 in excess of their ledger values. So if we take cost to the system as the proper basis from which to measure a write-up, this write-up should have been $1,176,287 instead of $2,516,615, the amount charged. But in this particular instance, there were several incidents of write-ups and write downs which the authors of 72-A did not get into Summary Table 33. To illustrate: A write-up and a write down reflecting appraisal valuations were charged, but another write-up reflecting appraisal valuations was not charged. A write-up to estimate of worth was charged and one was not charged. Capitalization of financial discount and expense was charged in one case but not in two other cases. Increases in retirement reserves which should have been credited as write downs were omitted in two cases. All told, there are twelve incidents, six of which are included in the summary and six of which are omitted. Out of all this, a total of $2,591,426 is charged against the company in the summary, while the actual amount which should have been charged, if the summary had been correctly made, is only a little more than half that amount, namely, $1,375,869.

Then there is another case where the summary report duplicates a write-up in transactions between a top holding, subholding, and operating company, with the net result that a write-up of $2,900,000 is charged whereas a write down of $2,500,000 should have been credited.

But let us continue. There is the case where seven operating subsidiaries of a company are charged in the summary with a write-up aggregating $40,450,053. Only about half a million of this alleged write-up is actually write-up on the books of the operating companies. The balance represents merely the difference between the values determined by an appraisal and the values of the properties entered on the ledgers of the companies. Now it should be noted particularly that this difference was not spread upon the ledgers but was kept only in memorandum form in a supplemental or side book for the information of the management. Notwithstanding this, the Commission's summary table includes this amount as a write-up. One wonders what would have happened if the telephone book had been handy. There are a lot of numbers in that book. We did hear once the story of the merchant who made up the total of his assets, and after deducting the total of his liabilities, he found a sizeable increase in his net worth which he took to be profit. After spending the amount in unwonted extravagance, he discovered to his dismay, that he had added in the year of Our Lord with his assets. The moral of the story is that you may be subject to later embarrassment if you should be discovered to have as much as imagined that your property was worth more than its ledger value. In any case, it would be unwise to keep any kind of record of your psychological write-ups. I know that these incidents probably astonish you but believe it or not, such were included among the figures submitted to Congress.

To resume—there was the case of a company which discovered oil and gas on its properties. Strange as it may seem, the directors got the idea that the properties were then worth more than they had been when carried on the books as wildcat acreage and they actually got a competent geologist to value the properties and subsequently wrote up the value of the properties by $41,042,462. Of course, you remember that the foreword to every report on the examination of accounts and records made by the Commission contains the distinct statement that "It does not purport to go into questions of the fair value of the property," et cetera. Nevertheless, this amount of $41,000,000 is included in the write-ups charged in the summary despite the fact that it was supported by an effort to determine value and despite the fact that it was offset on the books of the company by depletion reserves amounting to $13,668,161. Perhaps the examiner objected to the conclusions of the geologist which reminds me of the story which Hatfield tells about the geologist of the University of California who appeared in court as an expert witness. As often happens, the smart aleck-of-an-examiner, attempting to ridicule the geologist's pretension to knowledge, said: "And do you pretend to know what is going on in the bowels of the earth?" To this the geologist replied: "I do not know that the earth has any bowels."

I shall burden the record with only two more incidents. Did you ever try to make up a table and be required to include in it some negative amounts? It is a nuisance to have to do so, it is confusing to the reader to follow them in a column and it is a nuisance to the printer to have to put in footnotes. So the simple way out is to forget the negative amounts entirely? I do not know why the authors of Summary Table 33 omitted a write down of $80,789,144 which occurred on the books of a company. The Commission's summary table charged the system with a write-up of $8,655,193. The examiner also overlooked another write down of $2,804,145. In other words, the system should have been credited with a negative amount of $74,938,096 in the summary.

And finally, the authors of Volume 72-A include in Summary Table 33, over $33,000,000 of alleged write-up in one company. And what does the record show the opinion of the examiner to have been:

Question (by counsel): "Well, this is not a write up, I take it then, but a transfer of recorded investment from one stock to another."

Answer (by the Commission examiner): "That is correct."

I could continue this sorry recital of unfairness to the industry with other illustrations but I must leave the subject at this point to deal with other matters.

Is it not imperative, simply as a matter of common candor and intellectual honesty, that the Federal Trade Commission announce to all the world, with the same measure of publicity as it gave to its press releases on the subject of write-ups, that the summary table in Volume 72-A, which purported to reveal about one and one-half billion dollars of write-up and which was part of the information offered to Congress, quoted by Senator Norris on the floor of the Senate, and referred to by Judge Healy in the hearings on the Public Utility Holding Company Bill, is incorrect and misleading because:

(1) It alleges substantial amounts as write ups which were not in fact write ups and in many cases were not charged as write ups in the examination of the company;

(2) There were serious inconsistencies in the treatment afforded similar incidents; in what was included and what was excluded;

(3) It combines in one statistical statement amounts taken from the books of account at divergent dates and hence violates sound methods of statistical reporting;

(4) The hearings were largely *ex parte* in nature; the opportunity to cross-examine witnesses was circumscribed; the opportunity to put in rebuttal evidence was sometimes denied, as a result of which facts essential to accurate classification of incidents were often lacking;

(5) The report of the Commission relies on books of account, kept by several generations of bookkeepers of varied skill and experience and thus subject to errors of principle and errors of bookkeeping;

(6) The write ups were not properly classified by the Commission; indefensible write ups are included in a total which contains among others write ups approved by regulatory commissions cognizant of the conditions and circumstances prevailing at the time;

(7) The Commission failed to supply the contra entries to alleged write ups so as to enable the Congress and the public to determine even the accounting effect and consequence of the write ups;

(8) There are numerous arithmetical errors in the compilation; numerous write downs were omitted;

(9) The compilation is inconsistent in reporting some write ups gross and others net after provision for depreciation;

(10) The compilation is misleading in its implication that write ups had an adverse effect upon consumers' rates or that investors were unfavorably affected thereby. The Commission in the entire eighty-odd volumes offered no specific instance where write ups or write downs have influenced a regulatory body in the determination of rates;

(11) Accounting records alone are inadequate measures of value even when they unerringly reflect original cost;

(12) The Commission has included in the compilation, write ups on property long since retired from service;

(13) It includes as write up, the excess of cost over vendor's ledger value in arm's-length transactions;

(14) The compilation includes duplications arising out of the same transaction which swell the totals by a very substantial amount;

(15) It includes a large amount of write up which was never reported to the public in financial statements but which was in fact eliminated in published statements;

(16) It includes as write ups amounts which were never placed on books of account;

(17) The Commission's examiners sometimes arbitrarily treated overheads, interest on construction, and other intangibles as improper write ups.

Or, is it too much to expect that the Federal Trade Commission will do tardy justice to the utilities in acknowledging its error? Is it not true that the character of the Summary Table 33 is such that government attorneys would not hazard the specific use of this summary in any legal controversy, knowing full well its vulnerability? But shall the Congress take notice of the character of this record upon which it had reason to rely? We can not expect even the wisest or most honest of men to pass appropriate legislation on the basis of incomplete, misleading, or inaccurate information.

Hindsight is always more accurate than foresight and it is very easy to indulge in criticism after the event. The practice of writing up was in most instances as unwise as it was futile. It was unwise because it was certain to subject the utilities to unnecessary criticism from those who were seeking an excuse to criticise. The practice played into the hands of those antagonistic to private enterprise. It was futile because such ledger values were not of the slightest legal import in rate making. It is possible to offer explanations of motives and good reasons. But the damage to the industry caused by many of the useless and unnecessary asset revaluations is evident from the results. The public has been successfully led to believe that their rates are based on watered capitalization not only through loose, inaccurate, and misleading statements in legislative halls, but also in books and other published material. It is difficult to conceive of any practice less harmful to the consumers and more harmful to the industry. The practice was quite general throughout industry, but the utility industry could not afford to do what others were free to do. Investors in securities suffered from the practice in those instances where securities were issued against nonexistent values. It must always be remembered, however, that the fact of a write-up does not establish the fact of a write-up in excess of value. How much the write-ups involved were in excess of present value can never be known in the absence of a valuation and the investigation of the Federal Trade Commission sheds no light on this fundamental question. But increases in ledger values (not the result of arm's-length transactions) do not furnish the basis from which overvaluation may be imputed even though it can not be proved and even though it may not in fact exist. It is not the effect of write-ups with which the industry needs be concerned, but what the people *think* the effect is.

I come now to my second theme—the investor's experience in public utility securities. The amount of misinformation circulated on this subject is appalling.

Out of our studies of the investor's experience with public utility securities I wish to draw three subjects for brief comment:

(1) Losses due to receiverships;
(2) Paper profit or losses on public utility bonds and preferred stocks;
(3) Payment of dividends on preferred stock.

Allow me to present a few preliminary conclusions in connection with each of these studies.

(1) Losses due to receiverships

The significance and extent of receiverships in the public utility industry during the years 1931-1936 have been greatly over-emphasized. It is generally believed that "a number of large utility systems" were forced into receivership during this period. A careful appraisal of the available data, however, indicates that such statements are erroneous and are in reality only generalizations from a few overpublicized cases.

A number of questions are suggested in analyzing these data. What was the relative importance of receiverships in terms of the total investment in the various divisions of the industry? What is the relative importance of receiverships in various divisions of the public utility industries as compared with the record for other leading groups of securities, that is, railroads, real estate, municipal, and foreign? To what extent were the securities of companies in receivership held by other companies in receivership? How did the record for holding companies compare with that for operating companies? How do the electric companies compare with gas, traction, or companies rendering other types of utility services? How representative were these data? These and many other questions are logically raised when the significance of receiverships in the public utility industry is considered. In our studies we have attempted to answer these questions. The highlights of our conclusions may be summarized as follows:

During the period 1931-1936, inclusive, 213 electric, gas and traction operating and holding companies were reported to be in receivership, including compositions under the provisions of Article 77b. These receiverships involved 835 security issues held wholly or in part by the public, which cost the investor $2,920,000,000 at issue price. As of approximately September 1, 1936, this investment had a market value of $670,000,000. Investors in the securities of these 213 companies thus experienced a paper loss of $2,250,000,000 on these classes of public utility operating and holding companies.

Less than $225,000,000 of electric operating company securities were involved in receivership, or less than 2 per cent of the capitalization of the industry, recent market prices indicate that as much as one-third of this amount has so far been recovered. On the other hand, approximately $1,200,000,000 in securities of electric and gas holding companies in the hands of the public were involved in receivership. This represents about one-seventh of the outstanding capitalization of the holding companies. Even in receiverships, the bond interest in many instances was continued, so that actual bond defaults were much less than the 2 per cent of capitalization would imply.

The exceptionally fine record made by the electric companies during the depression may not be fully evident from the mere statement of the percentage of the industry involved in receivership. However, the comparable receivership experience for several other industries for which the data are either readily available or for which similar studies have been made bears out this statement.

Of these other groups, the most important comparison is that with the railroads, of which 21.7 per cent, in terms of capitalization, were in receivership. That the picture would have been much poorer if it had not been for the R.F.C. is pointed out by *Railway Age* (January 4, 1936, page 41) when it suggests that:

"Without the services of the R.F.C. the present total of railways in financial difficulties would be considerably swelled."

In terms of fixed capital, 12.8 per cent for manufactured gas and 45 per cent for traction companies were in receivership. The comparison with the railroads is especially important since they were under close supervision of the Federal government throughout this period and since under the Public Utility Holding Company Act the utilities have been placed under similar or more severe regulation. A record for the railroads which was more than twice as bad as that for manufactured gas and electric companies, is a sad commentary upon government regulation in terms of preventing losses to investors through receiverships. Is this the state of affairs to which closely regulated public utilities are to look forward in future depressions?

The data for foreign securities (37.5 per cent in default), real estate securities (61.7 per cent in default), and municipal securities (5 to 10 per cent in default) are not strictly comparable to those for the public utilities or the railroads since the former deal primarily with default, while the latter is concerned with receiverships. They do give, however, a fairly good indication of the comparatively favorable position of those holding securities of electric and manufactured gas companies.

While information is not available for other important groups, especially industrial companies, the large number of failures and receiverships during the past few years is well known. The utilities appear to have made at least as good, if not a better, record in regard to receiverships than any other group of industries.

(2) Paper Profit or Losses on Public Utility Bonds and Preferred Stocks

You will appreciate the extensiveness of this survey when I point out that the annual market movement of 369 issues of preferred stock of 223 public utility operating and holding companies, not in receivership, has been traced over the six-year period from 1930 to 1936. The total cost to investors of these issues was approximately $5,000,000,000, yet they had a market value in excess of $4,200,000,000 as of December 31, 1936. Investors thus had a paper loss of about 17 per cent. Practically all of the decline in electric preferred stocks were in those of holding companies which had depreciated about one-third below issue price, while those of controlled operating companies recorded a paper loss of only 6½ per cent. There has been a substantial improvement in the prices of these securities since December 31, 1933, which date marked the low point in our survey. This improvement may be indicated by the fact that 161 issues (including 23 of holding companies) were selling above par or issue price at the end of last year as compared with only 11 issues at the end of 1933.

The study of the experience of investors with bonds of public utility holding and operating companies, not in receivership, included 688 issues with a principal amount of approximately $7,000,000,000. A paper loss of 28 per cent on these bonds at the end of 1933 had been converted into a paper profit in excess of 5 per cent by December, 1936. The bonds of electric utilities accounted for about two-thirds of this total and showed a similar trend through the period.

(3) Payment of Dividends on Preferred Stock

The preferred stocks included in our tabulation had a prior claim on earnings of approximately $300,000,000 annually, or an average rate of slightly over 6 per cent on the invested sum. Dividends were well maintained in 1930 and 1931 with no reductions or omissions the first year and only a few in 1931. By 1933, 71 per cent of the amount possible was being paid, while further reductions brought this proportion to 65 in 1935. Resumption of dividends increased the proportion to 69 per cent in 1936. (If preferred stocks of companies in receivership are included in this tabulation, the proportion of dividends paid is slightly lower than 65 per cent). Among operating companies the proportion of preferred dividends omitted was small. These issues were mostly cumulative and arrears at this date have largely been paid up.

The proportions paid by predominantly electric companies were approximately the same as for all other utilities, except in 1934 and 1935 when the record was slightly less favorable. The major reductions occurred on holding company preferred stocks on which 47.8 per cent was paid in 1935; in 1936, however, the proportion was increased to 56.6 per cent—a record comparable to that for 1933. The dividends paid on controlled operating company preferred stocks have been increasing since 1934 when approximately three-fourths of the dividends possible were paid; by 1936, the proportion had increased to above 80 per cent. The favorable record indicated above may be further emphasized by pointing out that 286 issues out of the total of 430 paid dividends in full throughout the entire depression.

A few words may also be said concerning the Federal Power Commission's estimate of the decline of approximately $15,700,000,000 (from $16,800,000,000 to $1,100,000,000) in the market value of the common stocks of twenty-five principal holding companies from the peak in 1929 to April, 1935. This estimate, which was given wide currency in connection with the hearings on the Public Utility Holding Company Act of 1935, was based upon clearly fallacious assumptions. In the first place, the estimate of $16,800,000,000 as the market value of these securities at the peak of 1929 includes several duplicating items. Thus, intercompany holdings among the twenty-five companies totaling approximately $1,000,000,000 had not been eliminated. The tabulation also includes an additional $1,200,000,000 as the market value of two investment companies (United Corporation and American Superpower) which held mainly the securities of other companies in the tabulation. A closer approximation to the real situation would take into consideration these

duplications and reduce the total market value of securities held by the public at the peak in 1929 to $14,600,000,000.

This tabulation was used to indicate that investors suffered such large real losses in the decline after 1929. A careful analysis of trading activity in these issues from 1928 to 1930 indicates that it was impossible for investors to have taken such positions in these securities at the peak prices or anywhere near the peak prices and hence losses can not be measured from such levels. The evidence is clear. A study of the number of shares of each common stock traded at the peak prices shows that only two-hundredths of one per cent of the outstanding shares (intercompany holdings eliminated) were sold at these prices. Similarly, total trading on the day when the peak prices were established aggregated only 1.52 per cent of the outstanding number of shares, while even within 10 per cent of the peak prices (usually reached in 1929 or 1930) the gross trading accounted for less than one-fourth of the outstanding shares.* The number of shares investors could have purchased was obviously much smaller than the above totals since the bulk of the transactions was accounted for by in and out trading of speculators.

The common stock valuations at the peak prices were far in excess of what investors as a class actually invested in the companies. Thus, the market value of more than $16,700,000,000 shown for the common stocks of this group compared with their book value of $4,264,000,000. As a matter of fact, the consolidated gross assets of these systems were only $14,211,000,000 against which there were outstanding $1,204,000,000 in funded debt, $1,827,000,000 in preferred stocks, and $5,124,000,000 of securities of subsidiary companies—or a total of $8,155,000,000. It is evident from the balance sheets that investors paid substantially less for these securities than would seem to be the case when measured by the highly inflated prices of 1929.

It might also be pointed out that the technique of measuring values in terms of prices that were in effect for only a few sales, which in turn meant only a few minutes, is open to serious criticism in light of the impossibility for investors either to buy or sell at those prices (or even near those points) in any significant amounts. *Thus, on the one hand, the government has criticized utilities for revaluing properties to conform to a price level that existed for a number of years, and on the other, it goes to the extreme of measuring the values of the securities of these companies in terms of prices that existed for only a moment and which, for all practical purposes, were virtually non-existent in terms of the ability to buy or sell at those levels.*

What great American industry has treated both customers and investors as well as the electric utility industry?

And now finally to a few brief observations on residential electric service and the alleged influences of the holding company.

Our study of the place and function of the utility holding company had of necessity to consider its influence on the price of residential electric service. Careful and objective statistical analyses were used in examination of such questions as the following:

(1) Are the subsidiaries of holding companies generally rendering service at lower or higher prices than independent companies and municipal utilities?

(2) What has centralized management by holding companies contributed toward lowering the price of service?

(3) Have the holding companies made service available more quickly than would otherwise have been the case?

(4) Have the pricing policies of the holding companies encouraged or retarded socially desirable increased consumption?

(5) Have write ups demonstrably had the effect of keeping the price of service higher than the level which otherwise would have existed?

It was found that for the entire United States the average prices at which fifteen, twenty-five, or forty kilowatt hours were available on January 1, 1935, to independently served *consumers* were lower than the average prices at which the same amounts of use were available to consumers supplied by subsidiary companies. These average prices are net monthly bills weighted by the population of the community to which the price was available. Subsidiary companies supplied larger amounts of consumption from one hundred to five hundred kilowatt hours to consumers at prices which were lower than those of independent companies. These are overall averages, however, which may be misleading under some conditions.

Subsidiary companies served communities of less than a thousand population, which included a majority of the total number of communities, at average prices which were from 5 to 20 per cent lower, depending on amount of use, than the prices asked by independent companies. In communities of intermediate size the independent companies were found to be selling forty kilowatt hours or less at slightly lower prices.

Our studies disclose that the simple average and the median of prices charged by subsidiary companies in communities throughout the United States was lower regardless of the amount of consumption. This second measure is the average of instances of pricing, which is not weighted by the population to which the prices are available.

The comparative study of prices charged by subsidiary companies and municipal utilities showed roughly similar results. That is, the prices charged by subsidiary companies compare more favorably as the amount of consumption increases. Secondly, in communities of small size the service provided by the holding company is cheaper than that of any other form of organization or ownership. In none of these comparative studies has it been possible to recognize the tax differential between public and private enterprise. That is an appropriate subject of special study.

It has been found that the spread or amount of dispersion among the net monthly bills of subsidiary companies is on the average about one-half the amount existing among the prices charged by either independent companies or municipal utilities. The extreme instances are found primarily among communities served by local independent or municipal utilities and are normally found in the higher price levels.

The Federal Power Commission reported that, as a result of cost factors, prices tend to vary inversely with size of community. The smallest communities are served at prices for forty kilowatt hours which for all utilities are about 50 per cent higher than the prices in communities of largest size. This variation of price with size of community is 97 per cent for municipal utilities, 64 per cent for independent companies, and 48 per cent for subsidiary companies. Thus, there is a tendency for prices asked by subsidiary companies to exhibit less spread under various conditions of operation than those asked by establishments under other types of ownership.

It was found that over 82 per cent of all independent companies and 33 per cent of all subsidiary companies serve territories in which the largest community has less than 2500 population. In the case of four out of ten independent companies, the largest single market has less than 500 population. The report of

* These data include all the recorded trading on the following exchanges: New York Stock Exchange, New York Curb, Chicago, Baltimore, Boston, Philadelphia, San Francisco, and Los Angeles.

the Federal Power Commission revealed, too, that 67 per cent of the independent companies serve but a single community. The majority of such communities are of very small size. Another vital fact is that 30 per cent of the independently served communities of 0-999 population, as compared with 2 per cent in the case of subsidiary companies, are supplied by operating companies which include in their service areas no community of as much as 1000 population.

The independent form of organization has access to few of the economies of industrial integration and business combination in providing service for small communities physically or economically distant from large, concentrated markets.

Prices charged in small communities served by companies having access only to small markets (communities of not more than 5000 population) are from 17 to 68 per cent higher than communities served by companies having access to major markets (communities of at least 50,000 population). The prices charged by companies not having access to major markets are higher by from 17 to 33 per cent in the case of subsidiary companies and from 40 to 68 per cent in the case of independent companies.

Where there is access to major markets, the prices charged by subsidiary companies in small communities for the smaller amounts of use are higher than the prices charged by independent companies. Where there is access to only small markets, the prices charged by subsidiary companies are lower for all amounts of use.

Tentatively, it is concluded from these studies that large scale operating subsidiaries derive little advantage from the holding company relationship. It is definitely established that an increasing scale of operations brings business and industrial economies which are not available to the small, independent enterprise. It is as definitely established that the prices charged by small-scale subsidiary enterprises are lower because of the business economies realized through holding company management.

Enforcement of the dissolution provisions of the Act is of little consequence to consumers served by subsidiary companies of large size. Thousands of communities, however, are served by subsidiary companies without access to major markets, without the advantages of the industrial and business economies accruing to large-scale enterprises, and for which centralized management supplies equivalent advantages. What is to be their alternative subsequent to the enforcement of the Act? Will some other agency or form of organization, such as a regional operating company, be able to replace the holding company with a service just as economical?

Although the Holding Company Act was announced as an attack on size and "a beginning of an attempt to handle the problem of concentration of economic power," it was found that on the average, the large, national holding systems are supplying services at prices from 5 to 15 per cent lower than the prices charged by small holding company systems. The paradox of the Act of 1935 is that it aims at the elimination of that size of holding company which has served the customer best and from the widely scattered small town market where it has demonstrated its advantages.

It is frequently alleged that inflated and fictitious capital assets are given weight in fixing the rate base and result in unreasonably high charges to the consumer. The Federal Trade Commission examined 91 operating companies and found write ups varying from none to 110 per cent of fixed capital less amount of write up. If the critics of the regulatory process are correct, the prices charged for service would tend to be higher with increasing amounts of write up. A study, however, of the prices charged by these companies for residential service shows no correlation whatever between amount of write up and the price of service. Whatever the reasons for appreciation of capital assets or the effect on other social groups, it is evident that regulatory commissions have not in fact given weight to written up values in determining fair value and that consumers have been guarded against injury from this source.

In addition to comparing prices charged by various segments of the industry on January 1, 1935, we have made a study of the price experience of consumers since 1921 in 9378 communities of over 100 population and served by 106 subsidiary companies. Of this large number of communities, 18 per cent were served continuously since 1921, 50 per cent are served by establishments acquired from other owners, and 32 per cent are communities in which service was initiated by the reporting subsidiary company.

It is found that prices available to consumers in communities continuously served were reduced between January 1, 1922, and March, 1936, by an amount which varies from 25 per cent for 15 kilowatt hours to 55 per cent for 500 kilowatt hours of use.

Service was initiated subsequent to 1921 by these 106 subsidiary companies in a total of 2942 communities. The annual number of instances was at the peak from 1926 to 1930, declined sharply from 1932 to 1934, but again increased in 1935. The average price reduction from date of first service to March, 1936, was from 30 to 50 per cent, again depending on amount of use. The percentage reduction is somewhat less than in case of communities continuously served but the average date of initiation of service was the last quarter of 1928 and there has been a shorter period during which reductions have taken place.

Among the communities included in the study are 384 which are served by establishments acquired from the municipalities. The average reduction in price during the first two years after acquisition by the subsidiary companies was from 18 to 53 per cent of the price charged immediately prior to acquisition. The average decline in the price for forty kilowatt hours was 29 per cent during the first two years. Over the entire period of holding company management, which on the average was seven years, the percentage reduction varied from 39 per cent for 15 kilowatt hours to 73 per cent for 500 kilowatt hours.

This investigation includes a total of 3200 communities acquired after 1921 from independent owners. The average price decrease during the first two years after acquisition varied from 6 per cent for 15 kilowatt hours to 20 per cent for 500 kilowatt hours of use. During the entire period of eight and one-half years from the average date of acquisition to March, 1936, the prices charged were reduced by amounts varying from 27 to 56 per cent of the prices charged immediately prior to acquisition.

These data reflect the activities of the holding company in consolidating and integrating the operations of the properties coming under their control. These substantial reductions in rates are explained by the increasing availability of industrial and business economies to consumers previously served by local small-scale operating enterprises. The results of the study show that Commissioner Splawn was mistaken when he suggested that the decrease in the average unit price at which residential service was sold over this period was due to increased use per

(*Continued on page* 263)

Manufacturer's Stake in the Utility Business

By N. G. Symonds

Vice-President in Charge of Sales, Westinghouse Electric & Manufacturing Company

An address before the Second General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 2, 1937

THE privilege of discussing briefly before you the "Manufacturer's Stake in the Utility Business" is deeply appreciated. It is especially so at this meeting in Chicago, for I lived here for years and count many of my old neighbors among my closest friends, many of whom are here today. And so it is like coming home, and one speaks a little more frankly and to the point usually when he is home. If I do so today it is because a little frankness may perhaps do us all good.

Like all major industries, there are many branches to our electrical industry. No two branches, however, have so much in common as the manufacturer and the utility. When the central station idea was conceived, the Electrical Industry played a very minor part in the life of the nation. That was only a little over fifty years ago, yet in that short span of time it has become one of the most vital industries in the world. We are today more dependent upon the availability of electricity than the public realizes, or even than you and I realize. That fact was brought home forcibly to me a little over a year ago when a disastrous flood visited the Pittsburgh area. No one could go through that experience without some feeling of awe and pride at the part electricity plays in our lives. For days, during the flood, we were deprived of light, telephone, radio, water; and yet in an incredibly short time a turn of the switch again heralded the fact that the universal servant was back on the job, and our house was soon put in order.

Without central station power, the nation's manufacturing progress would have been slow, for we would have been afflicted with literally hundreds of voltages and frequencies. As it was, the central station idea and the consolidated system got under way none too soon, for it has taken some years to standardize on our now nearly universal 60-cycle sytem of today. Perhaps some will contend that 50-cycle would have been better, but the important fact to remember is that the utilities and the manufacturers did co-operate to bring order out of what could easily have been chaos. That standardization has permitted the manufacturers to get into mass production and has lowered the costs to the utilities on the equipment that they have needed.

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Again, the close co-operation between utilities and manufacturers has enabled the industry to proceed at an incredible speed in meeting the needs of the public. Higher and higher voltages, and heavier and more complicated distribution problems are being met successfully. The electrical manufacturers' plants are provided with more business and they are employing more men at satisfactory wages. The utilities in turn are selling an increasing volume of kilowatts to the consumer at an ever lowering price per kilowatt. Yes, the manufacturer has a most important stake in the utilities. The converse is just as true, for the utilities must have manufacturing support for the increasing demands on them for lower costs, greater safety, wider range of transmission, better measuring devices; and, through all these necessities, a better understanding and readier acceptance on the part of the public. It is perhaps trite for me to say that "United we stand and divided we fall", but it is a fact that we should remember at all times in our relations one with another.

Another and vital phase of the problem is presented in the manufacture and merchandising of consumer devices. These must be efficient, safe, attractive and, above all, reasonably priced. The closer manufacturers adhere to these principles the more sure they are to bring credit to the industry as a whole, and the more likely to improve the utilities' relations with the public.

To accomplish these desirable results the manufacturers must of necessity struggle to keep down the off-standard articles, and they are forced to recognize the problem as a national one. Indeed, their market is not only national but international, since they do a certain amount of export trade. To be sure, the latter is negligible as compared with the home market. The utilities, on the other hand, are, generally speaking, local in character, serving a limited area in each case; and in many situations they have local problems that do not make for more uniformity of product and service. There must be an ever increasing effort to reconcile these local problems to the national necessity. We must work together toward uniformity of practice, of code and of product. Joint committees have solved many problems for the industry. Through such committees, carefully chosen and broadly governed, we can come to mutual agreement on the many vexing problems of the day, and of the years to come.

Standardization permits of repetition in manufacture, quantity production for stock, and lower costs of production, distribution, installation and maintenance.

Standardization must not be allowed to become fixation. Neither must it be so loosely conducted as to be meaningless. Standardization must recognize progress and invention.

Surely a way can be found in which the National Electrical Code and other

safety rules can be kept in step with invention and discovery without reducing them to meaningless generalities and yet avoid fixing them so rigidly under law that progress is almost prohibited.

Years ago before our industry existed, Abraham Lincoln stated that "Nothing worth while is lost by taking time to do it right". While I certainly agree with that sentiment, I feel that we sometimes take too much time. We jockey too long for position over some inconsequential detail and forfeit all the good that might have been accomplished. I should like to feel that in all these joint committees we not only speak with frankness, without animosities being aroused, but with true sincerity. After all, as someone has well expressed it, "Sincerity is to speak as we think, to do as we pretend and profess, to perform and make good what we promise, and really be what we would seem and appear to be."

Today our industry, in common with all industry, is on trial. New conditions in the body politic have presented new problems for us to solve co-operatively. Each branch of any industry is in truth tied inseparately to every other branch, and we must solve our problems as well as we can from within the industry, and not in any way seem to invite outsiders in or give them the right to have our differences aired in public. I often think of Elbert Hubbard's definition of "Horse Sense" which you have probably often heard but which can, I believe, be repeated here with all due propriety:

"If you work for a man, in heaven's name work for him. If he pays wages that supply you your bread and butter, work for him, speak well of him, think well of him, stand by him, and stand by the institution he represents. I think if I worked for a man, I would work for him. I would not work for him a part of his time, but all of his time. I would give an undivided service or none. If put to a pinch, an ounce of loyalty is worth a pound of cleverness. If you must vilify, condemn and eternally disparage, why, resign your position, and when you are outside, damn to your heart's content. But, I pray you so long as you are a part of an institution, do not condemn it. Not that you will injure the institution—not that—but when you disparage the concern of which you are a part, you disparage yourself."

What are some of our mutual problems? The National Electrical Code is one, and a very vexing one indeed. For some time there have been delays and misunderstandings as to the relative positions of the manufacturer and the utility in dealing with the Code. Recently there has been a change for the better. There appears to be a definite desire and urge to reconcile the differences that have existed; and through the joint committee efforts will be continued to reach a common ground. It is to the interest of each branch of our industry to support the other, after controversial items have been threshed out in committee. Broad understanding of our mutual problems must be the basis of all of our negotiations. This is no place to discuss details, but if we can arrive at a proper understanding the manufacturers will have more orders for devices and the utilities will sell more kilowatts.

Another much discussed problem concerns the subject of uniform ordinances. The utilities must recognize their local necessities, but they should remember that the manufacturer cannot produce consumer goods at a low price unless he can manufacture a uniform product and standardize its use and acceptance. The manufacturer recognizes the fact that perhaps a world of no ordinances would be desirable, but he is also forced to recognize that political or personal ideas often force action that cannot be avoided, and so we say that we would like to be able to stand back of and fight for, where necessity demands, a uniform ordinance to the end that a cheaper product can be produced and our stake in the utilities increased. Both of us will benefit.

Another vexing problem is presented in arriving at an agreement as to the proper policing of wiring methods, the type of product, the safety of the device. If we will all submerge our own personal beliefs in arriving at a solution to this problem, I am sure we will benefit the industry as a whole and continue to do our own policing without interference from the outside, be it national or local. Certainly it is to the advantage of the manufacturer and the utility that the cost of wiring be kept as low as possible commensurate with safety, for the more houses properly wired with suitable number of outlets, the more appliances will be used and the larger will be the kilowatt consumption. Equally important is that well-wired houses bring people more and more of the benefits of electricity and make for that broader and better living that we hear so much about.

The complexity of the electrical systems and the multiplicity of new developments in apparatus to use electricity have carried the technical problems far beyond those of the old three wire lighting system.

The technical adequacy of rules for safe construction, installation and use must not be left in the hands of local people who do not have full knowledge of all the facts.

For example, we are about to market an electrostatic precipitator. What are the hazards and how may they be safeguarded against? Shall we depend on the local power company or the municipal electrical inspector in each community to pass or reject our design? Or shall we have it examined and tested by some nationally known organization of safety experts whose findings will be accepted throughout the country? Of course we want the product to be safe. The reputable manufacturer cannot afford to compromise with safety.

Electricity is one of the most vital forces available to the public. The safety that has been achieved in its use by so many millions of people may be the result of the care with which safety rules have been developed and administered.

Yes, the manufacturer has a great stake in the utilities, for through them his market can and will be greatly enlarged. Nevertheless, we must all realize that many selfish and disturbing elements will always exist that challenge our broad policy. Our only defense is mutual understanding and mutual cooperation. Some day, if not now, the public generally will understand that this fight is its fight also. By and large, the manufacturers and the utilities have done a pretty fair job in accomplishing their results in an orderly manner. If we can have uniform ordinances that are sane and not selfish, inspection that is fair, reasonable profits to the utility and the manufacturer, the electrical industry will continue to forge ahead and in a continually larger sense be an industry that is necessary to mankind.

To the utility it may appear that some new proposal for adverse legislation is only a local problem. But when we see the same kind of legislation offered in dozens of widely separated communities, or in a number of widely separated states, we know it has ceased to be a local problem. Such occurrences indicate that the sponsors of such laws have a national scope and it is only by constant watchfulness that a national acceptance of reasonable rules can be maintained.

Today our industry is faced with an

ever increasing volume of legislation that affects it. Much of the legislation is ill advised, proposed by small special interests and, in the last analysis, loaded with ultimate grief for the public at large. Much of it is not only very difficult to digest, but in some cases it is utterly indigestible. The utilities have had perhaps more than their share of such legislation, but the manufacturers have also been afflicted with the same problem. Perhaps if we will recognize that this problem is a mutual one, work together in our analysis of each law proposed, constantly be on guard for the industry as a whole, we can do a better job, not only for our industry, but for the public. After all is said and done, good public relations usually come in a large degree from our accomplishments in behalf of the public and the proper presenting of those facts to the public. This story cannot be properly told to the public unless we work together to a common end.

Not long ago I heard this quotation from a book:

"He was spared the menace of a well-stocked library as he learned to reason before he learned to read."

Much of our proposed legislation comes from economic theories out of well-stocked economic libraries and are certainly a menace to mankind. Perhaps if we could inject more reasoning power into this legislation before it was introduced and passed, we and the public would be spared the menace. By and large, our laws are passed by political representatives who, in our social system, reach a position of responsibility and power without necessarily having any training to fit them to use it. They serve no apprenticeship, they take no course of study, they need pass no examination as to technical ability. Is it any wonder, therefore, that they sometimes introduce and pass laws that are a menace to not only our industry but to mankind? Would we do any better in fields in which we have no experience? Ours is the responsibility to see that they have an understanding of the public interest, so far as electrical service is concerned.

The electrical industry has been a rapidly growing industry. It has prospered to a remarkable degree and any one or any business that has succeeded to a marked degree is always represented by the professional agitator as something that must be regulated, suppressed and harassed. The theory apparently is that success in a monetary way means that in some way the public has been defrauded. In the electrical industry we know that this success has come from the development of our industry to serve the public; to make for better living conditions and a vastly increased and widespread use of what a short time ago was a luxury and today is a commodity. Success too often breeds jealousies and we must always be on guard to protect our interests and don't ever forget that our interests are today essentially the public's interests.

One problem that has become increasingly important to both the utility and the manufacturer is the movement toward Rural Electrification. This program, born largely of political expediency, must be made a sound economic reality. For too many years this matter was treated too lightly because it was difficult to justify the cost of rural service by the load obtainable, except in irrigation and dairying communities. More and more the urge for this service has developed until it has become evident that more speed in electrifying the farms and rural communities must be made. Naturally the farmers want the service, but the cost in countless cases has been prohibitive and could not be amortized unless a more vigorous load-building campaign was introduced. Cooperation between the utilities and the manufacturers became imperative, and today the actual servicing is going ahead at a tremendous speed.

Too often cooperatives have been organized to build inadequate lines, and that only meant trouble for the utility that served the line, the manufacturer who furnished the material and the customer who used the service. Sound education must be introduced to insure proper materials, proper engineering and proper construction, to the end that the manufacturer may sell adequate equipment, the utility sell more kilowatts and the customer have more satisfaction from the electrification of his home. That satisfaction will bring with it less political trouble and less loss to the utility. The question of servicing these lines will be difficult, but I know of no method that can approach the type of service that the utilities give and the public accepts in such a matter-of-fact manner. Proper education of what that service means can be best accomplished by joint effort on the part of the utility and the manufacturer. Without that service the manufacturer would be more or less helpless; and without good equipment, properly engineered and properly manufactured, the cost to the utility would be prohibitive.

The utilities today provide excellent service to homes that, if the profit item were considered, would not be served. Probably 30% to 35% of all homes served with electricity represent a definite dollar loss to the utility; yet that number of homes provides a market for the manufacturer that is large. Those homes also are the challenge eternally presenting itself to the utility and the manufacturer alike in their effort to make them profitable and not a drag on the system. Too few people realize the extent of these profitless services. Yes, we both have a stake in solving this problem.

Out of all these joint efforts and problems have grown our Electric Leagues, Electric Associations, etc. In these associations the utility and the manufacturer join with the other two major branches of our industry, namely the Electrical Wholesaler and the Electrical Contractor and/or dealer. I have not stressed the importance of these two branches in the development of our industry because this paper deals specifically with the manufacturer and the utility. It is needless to say that their help and cooperation are vital to our success. While each local effort is more the individual problem of the utilities, neither they nor the manufacturer could make them successful without joint effort, supported in turn by all the other branches of the electrical industry. Without all these joint efforts we would still be selling refrigerators, ranges, water heaters, etc., in homeopathic quantities rather than in the tremendous volume that exists today. How could refrigerators have been brought to today's large public acceptance without the utilities' help? Yet what a fine thing for the load-building crew the manufacturers produced. The refrigerator alone has made many an unprofitable domestic customer a profitable one at no cost in the long run to the customer himself. Better meals, lower overall cost of electricity, ability to buy food in larger quantities give the answer to customer ownership of this one item at no ultimate cost to himself. How could this job have been so well done without our joint efforts.

A sizable percentage of our population is supported by the manufacturing branch of the industry. Its success is too greatly dependent on the utility branch

to permit any misunderstanding to arise between them. By the same token, the needs of the utilities for new devices, new machines, new engineering mean an interdependence one on the other that we must not and cannot ignore.

In closing, let me stress the fact that we still have many problems, some of which have been mentioned. The manufacturers will continue to work toward the cooperative solution of these problems. The utilities will do the same. We must do it as a united industry, for we cannot afford to have it done for us by some governmental agency or political bureau outside the industry. Our common problems must be solved by those who are familiar with all their aspects and implications. They must be solved fairly to the industry as a whole and to the public that we all serve.

Discussion of Mr. Symonds' Paper

By E. T. Gushee

Vice-President, The Detroit Edison Company

THE opportunity extended to me to discuss Mr. Symonds' paper is very welcome because his subject is one in which I am greatly interested. Utilities sincerely desire, and are seeking by every reasonable means, a greater measure of accord with electrical manufacturers upon those broad questions of policy which so greatly affect the prosperity and progress of the electrical industry, and are seeking that accord in the public interest. For these questions are of vital importance to the general public, whom both groups are organized to serve, and upon whose final approval the well-being of all electrical groups depends. They pay the freight with respect to many of the questions we are discussing today. If the charges are reasonable, they are cheerfully paid. If they are not reasonable, alternative methods are discovered and used. The public may not be directly articulate, but it possesses an effective veto, and, in the long run, always exercises it. It is important to remember that electricity supply is *not* a monopoly for anything except a little bit of lighting—the much-discussed one kilowatt hour per day. Electrical appliances are not employed for the pleasure of consuming kilowatt hours, but because they offer definite and specific advantages at a price within reach. Place unnecessary burdens upon that use—burdens not justified by the factual record—and the customer will seek and find other and more liberal methods of accomplishing his desires.

I can agree in principle with practically every point made by Mr. Symonds. A careful review of the manufacturer-utility relationship in this field leads me to believe that there is very little difference of opinion upon principle. There is, however, substantial difference in policy and programs which is manifest by wide disagreement among technical groups. This failure of the executives of the

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manufacturers and the utilities to reach an agreement on a definition of the problems is responsible for the lack of agreement which has stalemated progress.

Mr. Symonds emphasizes the economic necessity of nationwide acceptance of uniform requirements as to manufacturing methods and products. This relates both to wiring and appliances and/or utilization devices. The differences which exist between us on this subject relate principally to the ways and means by which such nationally recognized standards are to be developed and brought into general use. We submit that many of these standards are ones in which we have a very real and direct interest. They cease to be private standards of manufacturing practice when it is proposed to enforce them by regulatory legislation. Therefore, utilities feel that they should have an effective part in the standardizing procedure of those items which are of concern to them and to their customers. It is only fair to assume that utility ideas upon these matters are reasonable and not beyond the range of mutual discussion and satisfactory adjustment. The direct and measurable advantages of such agreements cannot be overlooked.

The whole legislative question must of necessity tie into codes, standards, and approval procedures. Whether we like it or not, the chances are that there will be an increasing number of state regulatory measures. We are at one with the manufacturer in our desire to protect the public by means of certain standardization of these legislative programs, but we object heartily when they are used as a means of freezing quality and unnecessarily increasing costs to the ultimate consumer. Moreover, before the legislative program can be discussed, there must be agreements with respect to the Code, standards, and approval procedure, which legislation is intended to enforce. It is not common practice to build the roof before you put a foundation under it.

The adequate wiring of consumer premises constitutes a fundamental problem not yet solved. But the solution must be found in order that the public may have the full benefit of electrical service. New materials and methods—development and progress—are important, but not all of the answer. Burdensome rules and regulations (local and national), unnecessary restrictions not required by the factual record—all contribute unnecessary cost to the original wiring job and make it less adequate than it should be.

My own company has long been active in the promotion of adequate wiring. We have contributed time and money to new developments looking toward safe methods and practices that would give the customer more outlets per dollar of expenditure without sacrificing the legitimate interests of manufacturers, contractors, or labor. We operate under the jurisdiction of an able and liberal-minded

inspection authority, always willing to cooperate in a program intended to benefit the public it represents. For instance, a survey of about 200 houses wired with the new industry product (CN cable assemblies) shows an average of 68 openings and over a thousand feet of cable per house. The houses are in the medium price class—two and three bedrooms—below $10,000 total cost.

Mr. Symonds remarks that joint committees have contributed much toward the solution of our problems, but he adds what I believe to be a new and very important thought. He says these committees must be *"broadly governed."* I like the idea back of this expression. For many years we have had numberless committees and reports without end, prepared with limitless labor, often to be filed away and forgotten. I submit that these committees are not wholly to blame—they are not properly governed. To my mind, the way to correct this situation is to have such committees function under an authoritative statement of principles that will properly direct their activities—a statement of broad policy agreed upon by manufacturers, utilities, insurance groups and others interested in this whole problem. The statement should define the policy and objectives in accordance with which the committees will work. With such a statement to inform our various joint committees, the detail work will flow rapidly toward a proper conclusion.

We already have a number of committees concerned with the industry Code-Approval Program. There will probably be others. Now the fundamental which I wish to emphasize is the utter necessity of agreement by the executives of the manufacturing industry and our own Industry Executives on a definition of principle as to the code approval and procedure and legislation—a definition which can be used for the basic instruction of committees. I propose to offer the following statement for discussion as representing policies which should guide our own committees, and as a basis for discussion and agreement with other interested groups; it being understood that this program can be carried out within the framework of the present code.

A Program Concerning the National Electrical Code, the Approval Procedure, Legislative Projects

General:

Utilities fully appreciate the desirability of nationally uniform Code rules, and of approval methods and procedure, but question the desirability of regulatory legislation in support of these in their present form. They will be glad to consider efforts in this direction based upon the existence of a sound industry Code and upon a sound industry approval procedure, realizing the probable ultimate need therefor.

Electrical Code:

Utilities believe that the best interest of the consuming public, and ultimately of every major electrical group, will be best served by a liberal, non-restrictive Code containing the minimum of regulations actually necessary to protect the public against the fire and accident hazard. Unnecessary rules not in this category burden the sale, not only of kilowatt-hours, but of wiring installations and utilization devices and appliances to the ultimate disadvantage of everyone. Utilities suggest that a very definite and whole-hearted effort be made to reconcile the differences that now exist and to work out a Code that will be mutually acceptable to both manufacturers and utilities and that they then join in securing its acceptance by other branches of the electrical industry.

For purpose of preliminary discussion with manufacturers, utilities suggest that a desirable Code would exhibit the following structure:

(a) The simplest possible set of rules to adequately protect against the fire and accident hazard.

(b) The rules based upon the factual record relative of those hazards and not upon imaginary risks and highly improbable conditions.

(c) The rules to definitely state the fundamental requirement to be accomplished, followed by such details as are necessary to enable the requirement to be met.

(d) The rules, in so far as it is possible, to be in such form that they will not unduly burden or prohibit departures from existing practices, when such departures comply with basic safety requirement.

(e) The rules to be in such legal form that they are suitable for enforcement by the police power in the name of public safety.

The above requirements, when considered in connection with the usual uses of the Code, appear to indicate a two-part Code. One part would contain the basic rules and regulations, fundamental in form, seldom requiring change, and suitable for legislative enactment, at least by direct reference. The second part would be a manual or field handbook with illustrations, drawings, etc., showing, in the present state of the art, acceptable ways and means of complying with the basic rules.

Approval Procedure:

Utilities recognize the benefits which would follow upon industry-wide acceptance of a satisfactory approval procedure and would support such a program. However, utilities have been compelled to criticize many features of the existing program, as containing elements not acceptable to them. The program involves test methods and approval procedures in the making of which utilities have no effective part, yet which regulate commerce in many products which utilities or their customers must buy and use. Standards approved by American Standards Association must represent a voluntary consensus of industry opinion. A standard cannot be approved in the face of valid objections urged by a responsible interest. The sponsor must affirmatively show genuine industry accord, and this has not yet been done.

Utilities are ready and willing to participate in the development of proper industry standards and to accord American Standards Association approval to them. The standards for wiring materials should not be combined with standards for utilization devices and appliances.

It is suggested that these standards fall naturally into two classifications:

(a) Basic safety standards which exhibit those absolutely essential requirements necessary for protection of the public against the fire and accident hazards. All materials, devices and appliances must conform to these standards, and any product which conforms becomes acceptable.

(b) Supplementing the above and being in addition thereto, there might be developed by competent joint industry action, when, as, and if required, certain standards of quality and performance.

The safety standards of (a) shall be subject to American Standards Association approval and be recognized as required by and acceptable to the whole industry. They are to be suitable for incorporation into sales control legislation under the "prima facie" clause.

The performance standards of (b) need not, although they may, be approved by American Standards Association. They represent commercial relationships—guides for buyers and users—and are not properly subjects of legislative enactments.

It is submitted that this approval program will result in a more general acceptance of the use of the products built in accordance with recognized industry standards, and so will regulate the manufacture and sale of inferior articles, and increase the authority, prestige, and amount of business handled by the approval agency. Therein also is the answer to attempts to establish local "political approval laboratories" and the like.

I am not assuming that the text of this statement is in final and unchangeable form which must be accepted in toto. There is doubtless room for improvement, but I think it represents a step in the direction in which we should go.

Agreement upon basic principles—fundamental objectives—must precede discussions of technical details. Such determinations of policy are a function of management. Properly exercised, they assure development of industry programs which are sound because they are in accord with the public interest. With the manufacturers and our industry in general agreement as to fundamentals, we have a better opportunity of talking things out with other groups who are vitally interested in these matters.

Mr. Symonds has indicated to you how complicated the problem is. It is encouraging to remember, however, that the basic underlying interests of all concerned really lie along the same path. This being so, it would seem that sooner or later we might find the way together.

The Electrical Standard Of Living

By C. E. Wilson

Vice-President in Charge of Sales, General Electric Company

An address before the Second General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 2, 1937

FOR the purpose of my discussion this morning, I am advancing three general propositions.

The first one is that as an American, enjoying the rights and privileges of citizenship, I am interested in and will help to promote any program or plan which promises to help stabilize our prosperity or raise the standards of living so that more of the good things of life may be enjoyed by more and more people.

The second proposition is that as a participant in the electrical industry I shall advocate and help to stimulate every possible means creating public favor for every branch of the industry and particularly to promote those activities which promise to bring it ever increasing goodwill.

Third, I am both selfishly and unselfishly interested in and concerned with what seems to me to be the present low average kilowatt hour consumption of electricity in the home, which it appears, may be doubled or even quadrupled by the more intensive and comprehensive development of the public's understanding of complete electric service.

The "American Standard of Living" is an expression well known to all of us. Contrasted with living standards in the rest of the world, our standard distinctively marks this country's progress in better living.

Under this standard of better living, the average American enjoys more and better food in greater variety than his brothers in other lands. More and better clothing to suit every taste. More and better homes, and within those homes more and better furniture and furnishings and greater comfort. More automobiles. Greater patronage of places of amusement and sport. More work and better wages for more people, in proportion to the population, than will be found anywhere in the world.

In these obvious evidences of the American standard of living, the nation as a whole takes great pride. It accepts, as a matter of principle, that the enjoyment of this standard as it exists today is the inherent right of every inhabitant of our land and the national ambition is to unremittingly raise the standard ever higher.

MR. WILSON

In that commendable ambition, this industry most heartily shares, because there is no way to better living that is not electrical. The "electrical standard of living" has been, in fact, the root and nutriment of the American standard of living, of which we so proudly boast—and that term would perhaps be more definitely descriptive.

At first, the term may suggest only the diversified use of electric service in the home and, of course, we want to make that suggestion even more definite. However, in its broad interpretation, the electrical standard of living has a far more extensive background embracing the whole mechanism of living.

We have more and better food because of electrical processing and preservation. To use but a single simple example for illustration, the 10-cent can of soup found conveniently available in millions of American kitchens, would be a practical impossibility without this industry's services in the processing of both the soup itself and the can in which it comes.

What makes us the best dressed nation in the world? A mechanized textile and clothing industry motivated by your power.

Excluding entirely for the moment, the electrical equipment in homes, is it not the application of modern electrical standards to the lumber, brick, cement, steel and building machinery industries which has made possible more and better materials for American homes? And within these homes we find more and better furniture and furnishings, dishes, linen, silverware, bathrooms and heating plants and so on indefinitely, all made better and cheaper by this industry's contributions to the producers of these goods.

We proudly point to the number of people owning automobiles in America as an outstanding mark of our high standard of living, but it should not be forgotten that behind the cheap automobile is low-cost steel production, and mechanized fabrication, to both of which our common products are primary contributors.

And what makes the movies possible, or the presentation of a modern drama or revue? The energy you have to sell and the products of the electrical manufacturing industry combined through the technical services of other groups in the whole industry.

Of fundmental importance is the fact that as complete electrical application has been made to the problem of low-cost production for all of the goods and services which constitute the American standard of living, that standard has spread to more and more millions and as it has spread, there have been created more and more work, better working conditions and a higher wage level. Yet with all this energizing of the mechanism of living, a member of your Institute tells me that the cost of electricity in America represents but 2 per cent of the family budget, and likewise in industry, but approximately 2 per cent of the cost of production.

That is the background of the electrical standard of living as our industry has applied it to better living indirectly through the electrification of industries generally—and it is a background of

which our entire industry may be justly proud.

Here perhaps a few moments might be profitably given to some of the progressive steps in industrial electrification leading to these manifold indirect contributions to better living. We know that the first timorous applications to industry were made when electrical generation and distribution, in practical form, was itself comparatively new. Hence, in the early days, each new application, first of electric light, then of electric power and heat, was a new experiment and a new adventure. Each individual application had to be sold by itself and adapted to structures designed for older forms of industrial practice.

But progressively, these experimental adventures in the industrial application of electric light, heat and power became practical realities—and as they did, the first faltering step toward real industrial electrification was taken. It may be called a faltering step because under the influence of the early experimental days, the industry continued the piece-meal process, selling each individual electrical application by itself. And as there was no cohesive effort to sell complete electrical application, there was relatively little interest in a comprehensive, completely integrated service.

Recognition of the need for that effort and that interest, within each part of the then-very-young electrical industry led, in turn, to recognition of the fact that each part of that industry was dependent upon the other and that the needs of the whole could be most speedily met by the effort of the whole. From this broad recognition of inter-dependence came the industry's early attempt at cooperation. Of course, these early attempts were stumbling in character because they were new, but nevertheless, with reasonable rapidity the combined cooperative efforts of our industry changed the industrial approach to electrification from a scattered skirmish to a mass attack, with the result that for some years past it has become common industrial practice to accept complete electric service and equipment as an integral and indispensable part of any new factory building. And since this acceptance exists, the interiors of new structures are designed and built so that this service may be most effectively and economically used—and the industrial users giving the electric service company a large volume are happy in the service rendered at low cost. Further, as the effectiveness and economy of these modern industrial structures have been reflected in lower production costs, occupants of older buildings engaged in the same lines of trade but using electric light, heat and power haphazardly and incidentally have been forced by competitive necessity to modernize their plants electrically—and as they have done this, they too have been giving the electric service company a larger volume and have been made happier in the service rendered at low cost.

In emphasizing the electrical industry's accomplishments in applying the electrical standard of living to industry and thus applying it to better living indirectly, and by reviewing the processes of this accomplishment, my object is to establish first, a similarity and second, a contrast between our industrial experience and the experience we have had and should have in taking our next great step —complete electrification of the home.

As I have said, our initial sales processes in industrial electrification were piece-meal. But then, we had the excuse that electricity itself was new and its applications experimental. With respect to the home market today, we do not have that excuse. And yet, perhaps to too great a degree, our approach to that market continues in spread skirmish formation rather than as a mass attack. As in the early days of industry, each part of our industry has been selling each part of the home service piece-meal and even in the few instances where all of the elements of service have been sold to the home, these elements have been supplementary rather than complementary to it.

It is true, of course, that from time to time the electrical industry has promoted electrical homes, and most of the larger electric service companies have sponsored exhibits of such homes in their localities. Regrettably, however, these activities, many of which took place a decade or more ago, found a public who at that time were not receptive to the broad conception of complete electrification and hence, were too often disposed to look upon these early electric homes as objects of curious interest rather than as something to be practicably imitated in their entirety. Nevertheless, these earlier activities do deserve credit for intensifying the demand for many individual electrical items and for laying the ground work for the definite possibilities of today.

I say that the possibilities of practicable imitations are definite today because with rapidly lowering rates for household service in recent years; with lower prices for high grade equipment; with a wider public acceptance of the value of electricity in the scheme of living; many forward-looking men in all branches of the industry have, during the past few years, come to the conclusion that the time has now definitely arrived when the electrical standard of living in homes can be applied in the manner and with the same degree of success as it had been applied in industry — but much faster.

This view gained great encouragement from the success of a well-established industry movement to introduce styling, convenience and efficiency in the home kitchen, with complete electrical equipment, as evidenced in the kitchen modernization program.

The new American home activity of the company with which I am associated gave still broader encouragement and its continuing success through your cooperation has fully confirmed that conclusion. Still further confirmation has come from the Kelvin Home Program, the Niagara-Hudson five star program and others of similar character.

The combined effect of all these commendable activities has been not only to confirm the opinions of their sponsors but, more importantly, it has served to broaden and strengthen the conviction that the American people are now ready for the adoption of complete electrical service in their homes, and as an integral part of any new home they buy. And, gentlemen, in that readiness lies the electric service company's most impressive opportunity to fully develop public goodwill through an intimate public service; and the entire industry's most dramatic opportunity to make the electrical standard of living the definite description of the American standard of living.

The natural question here is—how may we seize and fully develop this opportunity in a manner which takes full advantage of our industrial experience and the experiences gained in the complete electric home activities to which I have referred. Our industrial experience indicates that we were most successful when, with the realization of the part electrification was to play in industrial structures, architects, industrial engineers, builders, industrial equipment manufacturers, electric service companies, electrical contractors, industrial owners, and all others interested, worked together—each in his own interest, but

with each interest complementary to the other. Likewise in the more recent complete electrical home activities, success has been measured by the degree to which all branches of the home building industry, under the sponsorship of the local electric service company, have cooperatively promoted the idea locally, under a well-organized plan—and the degree to which a state-wide or national background has been given to the activity.

Hence, in seizing this opportunity, the application of this experience suggests that local utilities organize and sponsor an electrical standard of living activity under a well-coordinated national and local plan which engages and serves the interest of all local branches of the home building industry—electrical, non-electrical and financial. A project of wide public interest is the magnet which crystallizes and effectuates that kind of interest, so any successful plan must be of a nature to attract wide public interest.

Heretofore, dependence for that interest, with respect to electric home activities, has been largely placed upon sales promotion activities, such as newspaper advertising, the distribution of circular matter, the exhibition of homes, and devices of similar nature—and these cooperative stimulants of public curiosity, having proven value in securing both trade and public interest, must continue to be an indispensable part of any successful plan. Beyond these, however, there seems to be an opportunity to more definitely induce more individual home builders and more general builders to immediately embody the electrical standard of living in the homes they build, by taking advantage of the broad current popularity of contests, the psychology of which is to appeal to the almost universal desire to win something.

Picture, if you will, the electric service company with the benefit of all of its past experience, sponsoring such a local activity in cooperation with others in the local home building industry. Imagine that activity supported by all of the types of promotion found successful in such activities heretofore. Then picture behind this comprehensive program the added inducement of local awards to the home builders in its area who, within a limited period, build the homes which most nearly measure up to an electrical standard of living—a practicable standard which takes into account good architectural design, sound construction, high quality building materials and equipment, sound financing, complete electrification, proper insulation and other elements which, combined, constitute a good home, whether it be small or large.

Next imagine behind such a local activity substantial national awards which give national recognition to several of the best electrical - standard - of - living homes throughout the country. Visualize then, national publicity, both radio and other forms, behind these local and national activities and awards. If you have been able to follow this "moving picture," perhaps you get some conception of the view we should take of the extent of this opportunity and the kind of activity justified by it.

And what might we hope for from such an activity? Well, it would be my confident hope that by means of it you would persuade every new home builder in each of your areas to apply in some degree the electrical standard of living to his new home as his own selfish measure of the better living he wanted in the modern, comfortable and economical way. Then, with homes everywhere thus measured in terms of the owners' pride, purse and pursuit of happiness, complete electrical service should become a logical and integral part of many more new homes than would be the case otherwise, and it seems certain that that logic would be followed in tens of thousands of instances.

It has been said that keeping up with the Joneses has made America, and if through the stimulus of local competitions appealing to both pride and purse, you could establish a liberal sprinkling of Joneses dwelling comfortably and happily under the electrical standard of living, the reluctance of every American family to be outdone in living standard by his neighbor should develop a. fever of desire for similar homes on the part of all who see them. If, in 1937, we could nationally establish the electrical standard of living, as we might specify it, in the first hundred thousand new homes, the adoption of this standard in a million new homes would be clearly in sight, for from our experience with every major appliance, we know that once the first million is definitely in sight, whatever we have to sell is well on its way to being a recognized necessity—a standard of living in fact. And it is my belief that a program of the character here suggested, would accomplish that end—quickly.

Now, while many of you will perhaps agree that this is an appropriate time to develop a well-coordinated plan, taking advantage of every promotional device, with the objective of establishing the electrical standard of living in the first hundred thousand new homes, you might also say that such a program does not directly touch the broad market in existing homes—a market in which there is great need to further develop the consciousness that the road to lower rates is the greater and more varied utilization of electrical services.

With that comment, I would have to agree after emphasizing the fact that any well conceived program directed to the new home market should have a wide influence in creating a desire for more complete electrical service in all homes. Therefore, to reach this broader market, I would suggest another program, running collaterally with the new home market program and using its most effective promotional forms.

In the absence of anything here more tangible than an idea, I shall again have to call upon your imaginations. Suppose you placed in the hands of each of your customers a comprehensive story of living electrically the American way. Suppose then, that you combined with this story going to each of your customers, an invitation to them to express in their own words why the electrical standard of living appealed to them. Then, as a compelling inducement to accept that invitation, suppose you offered weekly, for a specified time, an assortment of attractive loeal awards to those who best expressed their satisfaction with existing service and their desires for a broader service. Recalling again the inherent human inclination to respond to a competition offering reward and recognition, and visualizing the possibilities of the promotion of such a competition, could we not reasonably expect that hundreds of thousands of electric service company customers throughout the United States would objectively turn their minds to a consideration of all the good things electric service had provided and the more good things it could provide—would not such thoughts be a tremendous stimulus not only to the greater utilization of these services, but of equal importance, to a better appreciation of the value and economy of the services you now render?

And even among those who did not enter the contest, would not the reading of such a story inevitably give these customers the same degree of appreciation?

Especially would not that be true if behind such an activity there was a na-

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Conditioned Air—Its Opportunities and Problems

By Earle W. Gray

In Charge of Air Conditioning, Commercial Department, Oklahoma Gas and Electric Company

An address before the First General Session of the Fifth Annual Convention of the Edison Electric Institute, Chicago, Illinois, June 1, 1937

A FEW years ago a new business came into being, or rather an old business which had confined itself largely to industry, found that it could furnish the one thing that mankind most desires—comfort—comfort through relief from extremes of temperature and improper humidities, comfort with air free of dust and odors, comfort that is conducive to better health and increased efficiency. Is it any wonder that this business of air conditioning is soaring and that our customers in ever-increasing numbers are accepting its benefits?

Every new business brings with it opportunities for those who will accept them. Air conditioning brought to the electric utilities an opportunity to build their load beyond anything dreamed of and, what is equally important, gave them an opportunity to assist their customers in profiting from this development. The service of the utility includes more than the sale of kilowatt hours. It is not complete until it carries through and sees that the energy purchased earns a return for the customer.

A new business also brings problems and air conditioning has been no exception. Many of the problems have already solved themselves and I am confident that the others will be mastered if we keep our feet on the ground. Our industry has been built on a succession of solved problems so we should have no fear of the present ones.

Beginning in 1933 our company has aggressively promoted the addition of air conditioning load to our lines. We now have 490 air conditioning and air washing installations, totalling 6,600 horsepower. We consider this good business to have and want more of it. Air conditioning increases profits and makes happier homes for our customers. As our customers prosper, we prosper.

Air conditioning promotion in a metropolitan center where there are potential customers for many large jobs, with factory branches and well-established contracting firms to make the sales and installations, is one thing. Air conditioning promotion on a system such as ours, where volume must be secured mainly through many relatively small jobs in scores of widely scattered small cities and towns, is something else. As our company does not merchandise, our activities are necessarily strictly promotional.

MR. GRAY

Our system extends from our properties in western Arkansas a distance of 380 miles across Oklahoma to the Texas border on the west, equivalent to the highway mileage from Philadelphia to Cleveland. It also extends 210 miles from the northern to the southern boundaries of Oklahoma. We serve 238 communities with a total population of 638,000, of which 225,000 is in Oklahoma City, where our General Office is located. Four of our cities are from 25,000 to 35,000; eight from 10,000 to 15,000; twelve from 3,000 to 8,000; and the remainder graduate down to the smallest village.

Our Commercial Department, outside of the General Office, consists of a Commercial Manager with one or more assistants in each of seven Division offices, including one in Oklahoma City. It was obvious that the potential air conditioning business would not justify a specialist in each division, and as the Division offices are from forty to two hundred miles from the General Office, it was not practicable for a specialist to go out on every job. Therefore, the Division Commercial Managers have made a study of air conditioning and, with the aid of a specialist in the General Office, have conducted our air conditioning promotion.

In the beginning we had difficulty because there were no experienced firms to sell the equipment. Consequently, when we did get a customer sufficiently interested to ask for bids he received such a variety of opinions as to the necessary capacity and the method of installation that he concluded none of the bidders knew what they were doing, threw up his hands and decided to wait until the art was better developed.

When we asked for bids on equipment for the first air conditioning installation in our own building, it was forcibly demonstrated to us that many of those selling equipment were somewhat at sea. It was evident from this experience that we would have to take the lead in both promotion and engineering, by acting as consultants for our customers and dealers.

Fortunately, we had as the head of our Mechanical and Structural Design Engineering Department a man who had not only had years of experience in ice plant design and erection but also had made a study of air conditioning. He was assigned the task of developing his department to handle the detail engineering and writing of specifications for those jobs that the Commercial Department considered worthy of such service. This plan has been followed through and has given excellent results. The revival of business has made it necessary to increase the personnel of the Engineering Department, and new men have been chosen with close attention to previous training and experience that fitted them for air conditioning work. Under this arrangement with the fluctuation of the air conditioning sea-

son, as many men as are needed are available for assignment to air conditioning engineering, and only the actual time used is charged against this promotion. The rest of the time these men are busy on the general run of work handled by the department.

The Division Commercial Manager develops his prospect and gives him an approximation of the capacity required, installation cost, and operating cost. If the customer requests specifications, a survey is made and specifications are furnished which give the capacities necessary, a general description of the equipment and a suggested method of installation.

In the preparation of specifications, standards are used which are a compilation of the best data available from the various manufacturers, the A. S. H. & V. E. and our own experience. The specifications are written so the equipment of any reputable manufacturer may be used. A check is made by the Distribution Engineering Department to determine the service facilities available at the given location, and this, together with a determination of the rate application, enables us to designate in the specifications whether single or three-phase motors shall be used, permissible starting currents, and the metering arrangement.

Many of the pages of the specifications are identical for certain classes of jobs so that, with the routine that is set up, the complete blue printed specifications are turned out in a very short time. Usually eight copies of the specifications are delivered to the customer by the Division Commercial Manager, together with an estimate of the cost of operation when added to his present usage. He is also furnished a list of the air conditioning firms in his territory and urged to ask for bids.

There is something psychological about a blue print that gives the customer confidence and influences him to go ahead with the purchase of equipment. We have frequently found that a hesitant prospect could thus be influenced to ask for bids.

We are in no sense in competition with consulting engineers. In fact, on many jobs we recommend that an engineer be retained. This phase of our work is limited to the smaller jobs where the customer will not retain an engineer, but is reluctant to go ahead with the purchase of equipment about which he knows nothing.

It has always been our purpose to reduce the amount of engineering service furnished just as rapidly as the distributors of equipment built up competent organizations. We now have a number of excellent companies in our territory and, to aid in building them up, we find it necessary to curtail the amount of engineering assistance furnished dealers.

Obviously, if a distributor plays the game and employs engineers, he operates under a much greater overhead than the firm which does not have an engineer and depends on the utility to do all of the engineering. Therefore, we have discontinued making surveys or doing other detail engineering for dealers, and do this type of work only on the direct request of the customer.

Of course we do advise with the dealers and help them as much as possible as long as we can do so without showing any favoritism. We are proud of the cordial relations that exist between these men and our company. We urge them to call us regarding jobs that they may be working on, so that we may check the rate application and give an accurate estimate of operating costs. We find that this greatly helps the sale, as the average customer has an exaggerated idea of the operating cost.

Periodically we mail to all the air conditioning distributors a list of those whom we consider good prospects and urge them to contact the customers and secure permission to bid. In return for the prospect lists that we furnish the distributors, we ask that they report to us each month the air conditioning sales they have made in our territory. These reports assist us in keeping an up-to-date record of all installations on our system. A combined report is furnished each month to our executives, and at the close of the year we make up an annual report, of which a copy is given to each of the distributors. This statistical work requires considerable time, but we consider it essential because it enables us to follow closely the trends of the business, and the manufacturers as well as the distributors are very glad to get this information.

Various publications frequently request the data thus collected for use in their analyses of national trends. The Air Conditioning Subcommittee of the Sales Committee of the Institute has endeavored to set up a plan whereby reports of installations on the systems of the various companies would be consolidated and released through Institute headquarters. So far the plan has not been workable because of the small number of companies reporting. Let us hope that this plan can be developed, as it would relieve the member companies of answering a large number of questionnaires and would give us all valuable data regarding the development of this load.

In our promotion most of the advertising media have been used. Direct mail pieces to carefully selected lists of customers prepared by our Division Commercial Managers have produced excellent results. Newspaper advertising is used in all of the papers on our system. In the smaller cities, a congratulatory newspaper advertisement on the occasion of the starting up of a new commercial installation is very effective and much appreciated by the owner. In all of our advertising we endeavor to play up the installations in our territory, showing our prospects how their neighbors and friends are profiting with air conditioning. Outdoor posters, radio programs, and educational talks before civic clubs, builders, architects, and employees have been helpful.

The utilities are not the only ones who have had problems. The manufacturers have had their share, and one of the most trying has been the difficulty of finding satisfactory outlets. In many instances distributors of household refrigerators undertook the distribution of air conditioning equipment with their regular dealers as sales outlets. They soon learned that this was a new type of business and that, although their entire organization and training had been centered on merchandising, they were now in the contracting business, a highly specialized one at that. They found that instead of specialty salesmen they had to have sales engineers as well as design and installation men who added heavily to their overhead.

Furthermore, they found that their dealers could not afford to hire men trained in air conditioning so could do little more than advise the distributor of any prospect and leave it up to him to engineer and sell it. This added to the selling expense of the distributor and, by the time he included a profit for the dealer, he could not compete with the distributor or manufacturer who was selling direct. The local dealer did not get very enthusiastic about trying to make air conditioning sales when he found that it took so much time to make one sale and he knew that he could make more money selling refrigerators. It became evident there wasn't much place in the field for the dealer, as far

as commercial air conditioning was concerned.

The manufacturers have realized these difficulties and in many cases have divorced air conditioning from household refrigeration. Where possible, they have appointed distributors whose sole interest is air conditioning or who at least are in contracting lines. These firms operate as distributor dealers, working the territory and selling direct and, where possible, setting up local dealers to handle their self-contained units and turn prospects for larger jobs to the distributor. These distributors are covering the territory fairly well, and the dealer situation is rapidly clarifying, at least in our larger cities, as the volume of air conditioning sales becomes great enough to keep them interested.

The utilities should continue to assist the manufacturers in securing good representation, as our promotional efforts will get results only according to the activity of the sales organizations.

Man power is the greatest need of the distributors at present. They are unable to secure sufficient men with the proper background for sales engineering, and skilled mechanics, particularly sheet metal men, are a premium.

Air conditioning has been accepted most rapidly by our restaurants and retail stores. It quickly shows a profit, and after one season's operation the owner says he would not do business without it. In the larger centers, competition between merchants is now selling air conditioning. This is shown in Oklahoma City, where in three blocks on Main Street twenty-nine stores now have air conditioning, and several others have delayed only because of lease difficulties. Office buildings and other installations have come on more slowly because of the larger investments necessary.

The promotion of residential air conditioning had an uphill climb at the start. In our territory with an abundance of 1,000 Btu natural gas selling at around 45c per thousand cubic feet, we have the ideal fuel for winter air conditioning, but a larger percentage of our homes use open gas fires or floor furnaces and have no basements, and in many cases no flues. Under these conditions, the idea of year 'round air conditioning was difficult to sell. As a result, most of the first installations consisted of a conditioner cabinet in each room, supplied with refrigerant from a remote compressor. A few larger homes which had basements were summer conditioned by using one conditioner in the basement, serving the first floor through floor grilles, and another conditioner in the attic with ducts above the ceiling, serving the second floor rooms through side wall grilles installed in partitions or above closet doors. A compressor in the basement furnished refrigerant for alternate operation of either conditioner.

The revival of residential construction last year brought several surprises. We found that the educational work on air conditioning was bearing fruit. The home builders wanted comfort in their new homes. Practically all of the better class homes now being built are fully insulated, which makes them better prospects for air conditioning. The craze for recreation rooms has popularized basements and made winter air conditioning plants easier to sell. The builder then finds that it will not cost him as much as he had expected to add the evaporator and condensing unit. As a result, even the speculative builders are featuring year 'round air conditioned homes.

If the builder is unwilling to make the investment for a complete plant, we urge the installation of the proper winter air conditioner with ducts, grilles and zoning designed for cooling in order that the summer equipment may be added later.

We feel sure that every home incorporating a winter air conditioner of this type will connect a compressor to our lines within the next few years. The average insulated home, with the first and second floors zoned for alternate operation, can be cooled with a three-horsepower compressor. Occasionally five horsepower is required, and our residential rate permits the use of individual single-phase motors up to and including five horsepower.

The room cooler offers the medium for volume sales of air conditioning. It is something that can be handled by the dealer in the small town and sold with a minimum of sales expense. The manufacturers have prepared survey forms with which in a few minutes the salesman can determine whether his room cooler is applicable or whether larger equipment is required. The dealer is doomed to failure who, instead of giving his salesmen some training in the fundamentals of air conditioning, starts them out with the idea that his cooler is good for so many square feet of floor space and that fresh air is a non-essential. Too often we have seen them applied in this hit or miss fashion, with the consequence that the customer was so displeased with the results that he condemned air conditioning in general.

The manufacturers have made rapid strides in the development of room coolers and now have excellent equipment in both air-cooled and water-cooled models. When we consider the amount of refrigeration they have packed into an attractive cabinet, the prices are reasonable.

Of course we all want to see the prices reduced so our market will be increased. We are the ones who can bring about a reduction. No rapid decrease can be expected in commercial air conditioning costs because of the large percentage of the total made up of local items of labor and material. The room cooler price, however, is largely equipment cost. If the utilities will get behind room coolers as they did with electric refrigeration, quantity production will reduce prices.

Room cooler installations present problems that must be given attention. The tendency has been to sell them as socket appliances, but we know that motors of the size necessary in the larger models will not generally operate satisfactorily on 115 volts because few of our older buildings have circuits larger than No. 14 wire. Some dealers think that the utility is unusually severe in requiring that motors above one-half horsepower be operated at 230 volts. After a few experiences with motor trouble and after we have convinced them that we are furnishing full voltage at the entrance, they decide that there may be a reason for such a requirement. Unfortunately, some of the manufacturers are shipping out machines built only for 115 volts, with no provision for reconnection. The horsepower rating is not an index of the power input, as we find room coolers with ¾ horsepower motors having an input of 1250 watts. Other air-cooled room coolers have a total input for compressor and fans as high as 1500 watts.

Interest in attic ventilation continues, and many installations have been made through the south and middle west. Attic ventilation undoubtedly has an important place in a well-rounded program, but we should not, because of a price complex, lose sight of the greater benefits to be had with air conditioning.

The utility has a very definite obligation to recommend to its customers the type of equipment that will give the greatest benefit for the amount invested. The public is intensely interested in air conditioning but, in spite of large sums spent on educational campaigns, the

average layman still thinks of air conditioning as cooling. This condition makes it easy for an over-enthusiastic salesman to sell an attic cooling installation to the customer who should have and can afford air conditioning.

We must not lose sight of the fact that in our territory, where last summer on forty-three days temperatures exceeded 100 degrees Fahrenheit and many more were in the high nineties, our citizens need relief from the heat during the day even more than at night, and the filtering of the air admitted to the house is of great importance.

Evaporative cooling is another load that has gained impetus under the public demand for cooling. The ordinary evaporative cooling system consisting of a washer, circulating pump, and a squirrel cage fan, does not control the humidity. It will give effective cooling without uncomfortably high humidities only in those localities where the wet bulb temperature is moderate. This condition obtains on a part of our system, and the air washer fills a real need in applications where some measure of cooling without humidity control is desired. In some cases, such as the small theater without prospect of sufficient revenue to justify the owning and operating cost of air conditioning, an air washer is the only answer. One of the national chain store systems has recently installed this type of equipment in a number of its stores in the middle west, and it will be interesting to study the results obtained this summer.

The air washer has its place in the field, but unfortunately some salesmen for this type of equipment endeavor to sell it as air conditioning and naturally get a hearing because their price is usually 50 per cent of that of an air conditioner. We feel that our customers should be told the facts as to what they are getting and what they can expect of it, and then they may spend their money as they wish. We do dislike to hear people condemning air conditioning and then find that they are really talking about an establishment which has an air washer. We believe that some of the gentlemen selling this equipment would merit greater cooperation and be more prosperous if they would recognize the definition of air conditioning as outlined in Bulletin No. 1109 of the National Better Business Bureau.

During the extreme heat of last summer, many hundreds of home-made excelsior coolers appeared. They usually consisted of a pad of excelsior held in a frame across the outside of the window and kept moist through a hose connection. A desk fan placed in the window pulled the outside air through the wet excelsior and actually gave some relief to those who were within range of the fan. From our standpoint, this had two beneficial results: it placed every available fan in service, and it proved that the public now considers it necessary to do something about the weather. Many of these customers will be ready to buy a room cooler this summer.

Various problems have arisen, not only in promoting but also in serving the air conditioning load. Rates, as for any load, must be competitive. Some companies have not found it necessary to promulgate special rates, but have waived the application of demand ratchet provisions to summer demands. Summer air conditioning for some applications has a low annual load factor, but the increasing acceptance of year 'round conditioning brings an improvement. We should not forget that a commercial customer becomes a bigger user of our service for lighting and other applications when we increase his business and his profits with air conditioning.

Heavy air conditioning load in congested areas served from an underground system, requires a large investment in facilities to serve low load factor business. The utilities and the manufacturers must work together to improve the characteristics of this load. Further developments in the use of the reversed cycle of refrigeration for winter air conditioning, and various types of storage systems offer much promise. There is now being installed on our system a combined direct expansion and storage system which will handle a 130 ton load with a 75-hp compressor.

The leaders of the industry realize that there is still much to be learned about air conditioning and are conducting a tremendous amount of research as well as formulating standard codes for design and application. Groups that are particularly active are The Air Conditioning Manufacturers Association, The American Society of Refrigerating Engineers, and The American Society of Heating and Ventilating Engineers.

The American Society of Heating and Ventilating Engineers allots 40 per cent of its income from dues directly to research. Since its inception, its Research Bureau has spent over $500,000, exclusive of the time and money represented in cooperative research with universities. The work of the Bureau this year includes 10 projects at its laboratory in Pittsburgh, and 12 projects with cooperative institutions. In addition to studies of air conditioning for comfort, this Bureau has research under way at Mayo Clinic, University of Illinois, and Harvard Health School with reference to air conditioning for health and prolonging of life. The utilities should encourage the fine work being done by this organization at least to the extent of membership by their engineers who are engaged in air conditioning work.

It is impossible to vision a limit to the potential air conditioning load. The American people are adopting air conditioning as an essential part of their lives just as they adopted the automobile. Every home valued above $7,500 will be air conditioned. Today a theater cannot operate without air conditioning. Soon the retail store, the office building, the restaurant, the hotel, the hospital, and every other type of establishment will find air conditioning a necessary part of its equipment. Industry in all lines from the manufacturer of drugs to the producer of iron castings, is using air conditioning, and new uses are found for it every day.

"Automatic Heat and Air Conditioning" in a survey of 47 utilities, reports that during the first four months of this year the air conditioning horsepower connected gained 130.6 per cent over the same period last year. The same authority reported that 74 utilities served 382,000 hp at the close of 1936 and estimated that the national increase during the year was 136,000 hp.

The head of one of our largest manufacturers of air conditioning equipment recently stated that air conditioning sales during 1936 amounted to $43,000,000 and he predicted sales of $350,000,000 annually by 1945. If sales of $43,000,000 represented an addition of 136,000 hp last year, then by the close of 1945 we can expect to add 5,000,000 hp. At a nominal figure of $20 per horsepower our industry can then expect $100,000,000 additional annual revenue.

The future is limited only by the extent of our own efforts. The progressive utility will not depend on its Commercial Department alone, but will have every official and employee sold on air conditioning and so well informed that he will talk air conditioning to his friends, his barber, his dentist, and his merchants. The desire for air conditioning is here. It is our job to remove the mystery and crystallize desire into action and additional revenue.

POWER SALES ITEMS

Power Contracts

Public Service Electric & Gas Company

Four large electric power contracts totalling more than 11,000 hp in connected load, have recently been obtained by Public Service Electric and Gas Company from E. I. duPont de Nemours and Company, the Hudson and Manhattan Railroad Company, Worthington Pump and Machinery Corporation and Swift and Company.

The largest of these contracts is for supplying the full electric power requirements of the duPont company's plastic manufacturing plant in Arlington. The company will abandon its generating plant and use Public Service electric power for all operations. The connected load will total approximately 5000 hp and it is estimated the consumption of current will exceed 1,000,000 kwhr per month. Changeover to Public Service power is expected to be made about July 1.

Public Service power will be used to operate Hudson and Manhattan tube trains on the Newark end of the line when the station is shifted in the near future from Park Place terminal, to the Pennsylvania Station on Market Street, under arrangements recently completed. Approximately 3300 hp of connected load will be required by the railroad for this service.

Swift & Company has contracted to use Public Service power for the operation of a new vegetable oil plant now under construction at Port Newark. Initial installation will amount to 1500 hp of connected load which will be ultimately increased to 3000 hp.

The Worthington Pump and Machinery Corporation has contracted to use 1300 hp of connected load for the operation of its new steel plate mill now under construction as an addition to its plant in Harrison.

Power Sales Items

AIR CONDITIONING

"Electricity Used by Air Conditioning," by W. P. Rock. *Heating, Piping and Air Conditioning,* April, 1937, p. 239. Keeney Publishing Company, Publishers, 6 North Michigan Avenue, Chicago, Ill.

Summary Table, Kwhr per hp for average air conditioned establishment per season. Residential and commercial.

"Air Conditioning and Summer Peaks," by E. Allen. *Electric Light and Power,* April, 1937, p. 36. Bennett-Watts-Haywood Co., Publishers, 360 North Michigan Avenue, Chicago, Ill.

This growing load is requiring additions to system capacity. Information gleaned during a trip in the southwest should interest all utilities.

"Put Your Air Conditioning Plant in Shape for Summer Operation," by Rush D. Touton. *Heating, Piping and Air Conditioning,* May, 1937, p. 291. Keeney Publishing Company, Publishers, 6 North Michigan Avenue, Chicago, Ill.

This article suggests some procedure for installation and renovating the system for renewed operation during the Summer months.

"What's the Cost of Air Conditioning," by Rex E. Hieronymus. *Heating, Piping and Air Conditioning,* May, 1937, p. 295. Keeney Publishing Company, Publishers, 6 North Michigan Avenue, Chicago, Ill.

In this article the author analyzes the cost of equipment and operating costs of an air conditioning system for a two-story building of miscellaneous tenancy, including a bank, offices, shops, a restaurant, etc., and compares the figures with the cost of a straight heating system. The method of heating and cooling employed, which is of rather unusual design, is briefly described and diagrammed.

"Gas as a Source of Power for Air Conditioning," by B. A. Johnson, Peoples Gas Light and Coke Co., Chicago. *Heating, Piping and Air Conditioning,* May, 1937. Keeney Publishing Company, Publishers, 6 North Michigan Avenue, Chicago, Ill.

A brief description given at the University of Wisconsin during a convention on air conditioning and automatic heating, compares the cost of operation by gas engine with electricity.

CENTRAL STATIONS

"Pooling Power in a Large Industrial Center," by J. W. Parker and R. E. Greene. *Mechanical Engineering,* May, 1937, p. 335. American Society of Mechanical Engineers, Publishers, 29 West 39th Street, New York City.

Use of central-station energy in territory served by the Detroit Edison Company.

COMMERCIAL METHODS

"Modernization and New Uses Help the Power Salesman," by L. J. Lamberger. *Electrical World,* March 27, 1937, p. 1049. McGraw-Hill Publishing Co., Inc., Publishers, 330 West 42nd Street, New York City.

Two separate avenues to added power sales available to wide-awake salesmen.

DIESEL ENGINES

"An Operating History of Bath, N. Y., Light Plant," by Fred Nollett. *Diesel Power,* March, 1937, p. 169. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

Method of operation, production costs and list of principal equipment.

"Burlington, Kansas, Invests in Profitable Light Plant," by E. T. Archer, Consulting Engineer. *Diesel Power,* March, 1937, p. 172. Diesel Publications, Inc., Publishers, 192 Lexington Avenue New York City.

Short article on the Burlington Diesel plant which is giving much better service than the utility provided at a lower cost.

"The Guest Editor's Views." *Diesel Power,* March, 1937, p. 165. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

Diesel plants need to be properly applied, operation and maintenance have to be carried out by intelligent men, and they should have revenues sufficient to adequately cover operating costs and reasonable fixed charges.

"Isolated Power Plant Situation in New York City." *Diesel Power,* April, 1937. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

Tabulation of Diesel plants now in operation in the city with a number of plants described, among them:

Red Lion Market
Amalgamated Housing Development
Broadway Central Hotel
Empire Trust Bldg.
Sailors Snug Harbor
Two Park Avenue Buildings

DIESEL FUEL

"Taxes on Diesel Fuel Need Worry No One." *Diesel Power,* March, 1937, p. 192. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

A survey of existing and proposed taxes on Diesel fuel oil and license requirements.

ELECTRIC DRIVES

"Electric Drives for the Mining Industry," by J. D. Duncan. *Electrical News and Engineering,* April 15, 1937, p. 44. Hugh C. MacLean Publications, Ltd., Publishers, 347 Adelaide Street West, Toronto 2, Ontario, Canada.

"Coincidental Electric Drives," by L. E. Miller. *Electrical Engineering,* May, 1937, p. 578. American Institute of Electrical Engineers, Publishers, 33 West 39th Street, New York City.

A "coincidental electric drive" may be defined as a drive consisting of several units of one machine or a group of machines; each unit or machine driven by a separate motor.

ELECTRIC FURNACE

"Non-Ferrous Silver Brazing in Electric Furnace," by W. K. Rankin, General Electric Co., Philadelphia, Pa. *Electrical World,* April 10, 1937, p. 51. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

Low-melting point silver-brazing alloy and flux permits quantity production in batch type electric furnace.

ELECTRIC HEATING

"Electric Heat Applied to the Special Requirements of the Process Industry," by R. A. Carleton, Heat Transfer Dept., Elliott Co., Jeannette, Pa. *Powerfax,* Spring, 1937, p. 18. Elliott Company, Publishers, Pittsburgh, Pa.

This article describes the various types

PUBLICATIONS OF THE INSTITUTE

Pub. No.		*Date Issued*	*Price to Members*	*Price to Non-Members*	*Price to Foreign Countries*
E1	Rectifier Wave Shape	(4/37)	$0.40	$1.00	$1.10
E2	The Electric Light and Power Industry in 1936	(1/37)	.30	.75	.85
E3	Jointly Used Wood Pole Lines Specifications	(1/37)	.50	1.50	1.60
E4	Joint Use of Poles, 6.6 and 13.2 kv, Safety Features	(1/37)	.30	.75	.85
E5	Principles and Practices for Inductive Coordination, A.A.R. and E.E.I.	(1/37)	n. c.	n. c.	n. c.
D1	The Objective Type Rates; 1933-1936	(4/36)	.80	2.00	2.15
D2	The Electric Light and Power Industry in 1935	(6/36)	.30	.75	.85
D5	Power Station Chemistry—1936	(7/36)	.20	.50	.55
D6	Boilers, Economizers, Air Heaters and Piping—1936	(9/36)	.60	1.50	1.60
D7	Combustion, 1936	(10/36)	.60	1.50	1.60
D8	Superposition of High Pressure Non-Condensing Equipment on Existing Power Stations	(10/36)	.25	.65	.75
D9	Principles and practice in Grounding	(10/36)	.40	1.00	1.10
D10	Oil and Gas Engines—1935-1936	(10/36)	.40	1.00	1.10
D11	Turbines, Condensers, Feedwater Heaters and Pumps—1936	(11/36)	.60	1.50	1.60
D12	Air Conditioning—1936	(11/36)	1.20	3.00	3.15
D13	Engineering Reports of the Joint Subcommittee on Development and Research—Vol. III	(1/37)	5.00	10.00	10.00
D14	Engineering Reports of the Joint Subcommittee on Development and Research—Vol. IV	(1/37)	5.00	10.00	10.00
D15	Penstocks	(12/36)	1.00	2.50	2.65
D17	Cable Operation—1935	(12/36)	.60	1.50	1.60
C4	Boilers, Economizers, Air Heaters and Piping—1935	(7/35)	.60	1.50	1.60
C5	Turbines, Condensers and Feedwater Heaters—1935	(7/35)	.40	1.00	1.10
C6	Combustion—1935	(8/35)	.80	2.00	2.15
C7	Air Conditioning—1935	(9/35)	.50	1.25	1.35
C8	Oil and Gas Engines—1934-1935	(10/35)	.50	1.25	1.35
C9	Methods of Measuring Radio Noise	(11/35)	.15	.35	.45
C10	Symbols for Metering Diagrams	(12/35)	.10	.10	.10
C11	Cable Operation—1934	(12/35)	.60	1.50	1.60
C12	Twelve Messages on Accident Prevention in the Electric Public Utilities	(12/35)	.10	.10	.10
C14	Resuscitation Charts	(4/36)	1-10 copies	.10 each	
			11-100 copies	.05 each	
			101-1000 copies	.04 each	
			1001 or more	.03 each	
B2	Air Conditioning—1934	(5/34)	.75	1.85	2.00
B3	Condensers, Feedwater Heaters, Evaporators, and Boiler Feed Pumps—1934	(6/34)	.45	1.15	1.25
B4	Turbines—1934	(6/34)	.40	1.00	1.10
B5	Station Piping—1934	(7/34)	.60	1.50	1.60
B7	Oil and Gas Engines	(8/34)	.40	1.00	1.10
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A16	Load and Revenue Forecasting	(7/33)	.30	.75	.85
A17	Promotion of Home Air Conditioning	(8/33)	.20	.50	.60
A19	Hydraulic Governors	(8/33)	.20	.50	.60

The prices include mailing charges. Member prices apply to employees of company members of the Institute. Please send money order or check with order. Orders should be addressed to—

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of electric heating equipment as applied to several industrial processes.

"Annual Survey Shows Increased Commercial Cooking Sales," by B. M. Riker. *Electric Light and Power,* May, 1937, p. 58. Bennett-Watts-Haywood Co., Publishers, 360 North Michigan Avenue, Chicago, Ill.

This survey is a joint activity of the industrial power and heating and commercial sales subcommittee of the Edison Electric Institute. Eleventh Annual Electric Commercial Cooking Survey.

ELECTRIC WELDING

"Variety Spices Life of the Electric Welding Engineer." *Electrical World,* March 13, 1937, p. 63. McGraw-Hill Publishing Co., Inc., Publishers, 330 West 42nd Street, New York City.

Brief mention of four examples of electric welding.

INDUSTRIAL ELECTRIFICATION

"Industrial Electrification." *Electrical World,* February 13, 1937, p. 84. McGraw-Hill Publishing Co., Inc., Publishers, 330 West 42nd Street, New York City.

Three items which contain ideas for power sales:

Condition test rooms to improve produet
Reverberatory furnace melts gold
Welded beam-column assembly described

"Industrial Electrification." *Electrical World,* April 10, 1937, p. 80. McGraw-Hill Publishing Co., Inc., Publishers, 330 West 42nd Street, New York City.

Three items which contain ideas for power sales:

Modernized flour mill drive shows savings
Automatic breakers save $20 per day
Oil preheater saves money on fuel

"Industrial Electrification." *Electrical World,* April 24, 1937, p. 90. McGraw-Hill Publishing Co., Inc., Publishers, 330 West 42nd Street, New York City.

Two items which contain ideas for power sales:

Heat-treat oils in electrified kettle
Alternating currents agitate solution

POWER PLANTS

"A Laundry Power Plant Comes of Age," by C. H. Herr. *Power,* April, 1937, p. 192. McGraw-Hill Publishing Co., Inc., Publishers, 330 West 42nd Street, New York City.

Intelligent engineering leading up to complete modernization enables power-service facilities of growing laundry to keep pace with business expansion.

"Test of Unit No. 5 at Rouge Plant of the Ford Motor Company," by W. W. Dulmage. *Combustion,* April, 1937, p. 22. Combustion Publishing Co., Inc., Publishers, 200 Madison Avenue, New York City.

This plant is not only the largest industrial power plant in the world but has the greatest capacity in high-pressure steam.

PUMPS

"Proper Installation of Centrifugal Pumps . . . New Standards Issued by the Hydraulic Institute." *Heating, Piping and Air Conditioning,* May, 1937, p. 300. Keeney Publishing Company, Publishers, 6 North Michigan Avenue, Chicago, Ill.

STRIP MILLS

"Bethlehem's Continuous Mill." *Iron and Steel Engineer,* April, 1937, p. B1. Association of Iron and Steel Engineers, Publishers, 1018 Empire Bldg., Pittsburgh, Pa.

Pictorial description and flow sheet of the new continuous strip mill at Lackawanna, New York.

The Electrical Standard of Living

(*Continued from page* 254)

tional promotion, national awards and national recognition? You might even go so far as to assume that this national background might be contributed. Then, if you will look upon such an activity as a broad-base collateral activity to the spear head directed at new homes, I think you will visualize with me the full breadth of the opportunity before us and the type of local and national activity which might be most effectively applied to its realization.

While I have placed all of this before you in an imaginative vein, it is my conviction that these collateral programs are easly reducible to practicable working form—and speaking for the company I represent, I may say that we shall be happy to work and spend with you in that direction—and perhaps others will be similarly disposed.

Maybe I am letting my enthusiasm run away with me but everything seems favorable to the mutual success of such a dual-purpose program. Initiated now, it would come at a time when the wage level is at its highest point in years; when interest in home building is at fever heat; when the construction of over a million new homes is under way or contemplated in the near future; when the new American idea of a modern home, completely electified, needs but a concerted push to establish that idea as the American standard of living and the objective goal of every American family; when, in this very year, concerted action can establish the electrical standard of living in the first hundred thousand homes, and thus place clearly in sight that standard in the first million homes —surely this combination of favorable circumstances offers the electrical industry its most propitious chance to excel its great contributions to industry and commerce with intimate contributions of infinite social value in America's millions of homes.

Let us grasp that chance with the assurance that for this obvious and widely recognized public service, the public goodwill you so richly deserve will be gratefully granted in bountiful measure.

There is no better way to gain goodwill than to do good with a will.

There is no better way of doing good than to work for better living.

There is no way to better living that isn't electrical.

There is no better way to load building than building the electrical standard of living in new homes and elevating it in all homes.

Safety Code Under Revision

(*Continued from page* 214)

a guide for minimum construction requirements for safety.

b. Substitute sound principles of engineering design for specific requirements where such a plan is workable.

c. Omit rules and material which have been found to be unnecessary and infrequently used.

d. Make as little change as possible in the form and arrangement of the present Code in order to avoid the necessity of having to learn to use a new form of the Code.

The above suggestions have been made with the understanding that additional and specific requirements will be submitted later. It is therefore urgent that all power companies give the provisions and rules in this code careful consideration and submit any suggested changes as promptly as possible to the Edison Electric Institute where all proposals that have adequate support will be correlated and submitted as proposals of the electric light and power industry.

Fifth Annual Convention

(*Continued from page* 206)

the twelve members of his subcommittee and open the meeting to a general discussion of the subjects to be dealt with by this subcommittee.

An organization meeting of the committee on Plant Accounting and Records was likewise changed to a general discussion. This committee under the chairmanship of Mr. Bernard S. Rodey of the Consolidated Edison Company, has ten members. One hundred twenty persons attended the meeting of this committee which was held Thursday afternoon, June 3.

The Sales Committee got off to an early start on Wednesday morning, with a breakfast meeting at 8 o'clock. Nineteen members were present, and the discussion was devoted to the proposed joint industry program in the interests of adequate wiring. A report on this meeting will appear in the next issue of the BULLETIN. The Operating Committee held a luncheon meeting on Wednesday, and the Board of Trustees met at luncheon on Thursday.

EXHIBITS

Exhibits were arranged in the anteroom to the Grand Ball Room, where general sessions of the convention took place. These were planned to give delegates an opportunity to visualize the work of the Institute's Sales Committee. They included exhibits of the National Kitchen Modernizing Bureau, the National Better Light-Better Sight Bureau, the Electric Water Systems Council, the Commercial Electric Cookery Council and the Electrical Housewares Program.

In addition to these was a model of the New York World's Fair, as it will appear when opened in 1939.

ENTERTAINMENT

An interesting program of entertainment and recreation played an important role throughout the week. On Tuesday night the President's Reception in the Red Lacquer Room of the Palmer House was well attended and was followed by dancing, with music provided by an excellent orchestra.

A luncheon and card party for the ladies took place on Wednesday afternoon, at the Edgewater Beach Hotel, to which the guests were taken from the Palmer House in private buses. There was dancing the same evening in the Grand Ball Room of the Palmer House.

Thursday afternoon another interesting feature arranged for the ladies attending the convention was a tea and fashion show at Marshall Field and Company.

Resolution Thanking Hosts of the Convention

"RESOLVED: That the thanks of the Edison Electric Institute, in convention assembled, be extended to Mr. E. J. Doyle and Mr. John F. Gilchrist, Chairman and Vice-Chairman, respectively, of the Chicago Reception Committee, and to the members of their committee; to the Arrangements and Entertainment Committee; to the Commonwealth Edison Company and other public utility organizations in the City of Chicago, and to Mr. E. T. Lawless and the staff of the Palmer House for the careful arrangements and many courtesies which have made our sojourn here pleasing and enjoyable . . ."

The Chicago Reception Committee was composed of the following gentlemen: Messrs. Edward J. Doyle, *Chairman,* Commonwealth Edison Company; John F. Gilchrist, *Vice-Chairman,* Commonwealth Edison Company; Charles W. Bradley, Public Service Company of Northern Illinois; William Chamberlain, The United Light and Power Company; A. G. DeClercq, Commonwealth Edison Company; B. J. Denman, The United Light and Power Company; Harry B. Gear, Commonwealth Edison Company; Robert J. Graf, H. M. Byllesby and Company; Julius L. Hecht, Public Service Company of Northern Illinois; Col. R. H. James, Super-Power Company of Illinois and Chicago District Electric Generating Corporation; George R. Jones, Western United Gas and Electric Company and Public Service Company of Northern Illinois; John G. Learned, Public Service Company of Northern Illinois; E. W. Lloyd, Commonwealth Edison Company; B. W. Lynch, Public Utility Engineering and Service Corporation; C. S. McCain, The United Light and Power Company, and Purcell L. Smith, Commonwealth Edison Company.

Safety Pays Big Dividends

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structions from the foreman, have all combined to make this work safer than ordinary line work.

But what about R? Would you throw into the discard a man with such a spirit? A thousand times No! We'll find a job that he can do and I'll bet he'll earn his pay.

Eternal vigilance is the price of safety. Yes, from the hiring of the green man, all through his training period, right up till he becomes a foreman, and then the job has just been well begun, for you must then teach him to be a trainer of other men. One of my old foremen gave this as his idea of a foreman. "A foreman must realize his three way responsibility: namely; to his men, to the company, and to the public, knowing full well that his ultimate success depends on his success in dealing with these three groups." That man has learned the value of safety.

So, we believe in safety! It has saved many lives. It has reduced accidents. It is not a fad. We all believe in and work at it. We think that saving through safety is sensible.

In the days to come we are facing more unrest among the laboring class than ever before. Labor will make new and often unreasonable demands. How better can they be met than by the development of mutual trust and confidence through your safety meetings?

More and more important to the success of any enterprise will be the loyal, efficient service of its employees. A careful selection of the employee, his careful training, an adequate safety and health program, and a decent regard for the rights and needs of the employees are most important factors in building the ideal employee group. No industry has a more intelligent, more loyal, higher type group of employees than the public utilities of this country. The safety program has been tried and has paid big dividends.

Building and Operating of Utility Systems

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of transferring or transmitting power from a point on the system where there is a superfluity of power facilities to a point where there is a deficiency, it is highly desirable that all its neighbors be consulted. These neighbors may all be in a very limited region or they may extend over the entire state. Sometimes they may even extend across state boundaries: but a good criterion to follow is this: taking a reasonable forward view of likely development, what would be the soundest thing to do from a standpoint of providing adequate service and proper facilities at lowest cost if all the properties involved were under a single management or ownership? If the answer to this should be the desirability of interconnecting portions of systems that are not interconnected, or of building generating capacity in one portion as against another portion previously contemplated, then those are the things that should be done and agreements consummated to properly and equitably share the burdens and benefits of such interconnections or of any other facilities. Further, if such an investigation should disclose no immediate likelihood of justification of joining of facilities, it ought to be remembered that as system loads grow the conditions underlying the economics and the benefits or values of pooling of facilities are likely to change. It becomes necessary, therefore, to re-explore these situations again and again as frequently as changing conditions of sufficient consequence occur, and when the conditions finally warrant an interconnection then it should be made. Thus will the gaps in the picture of interconnection—interconnection which goes back to almost the beginning of the utility industry—be closed. With the closing of these gaps there will be brought to full development the task of constructing a coordinated system of power supply begun by private management more than fifty years ago. This work has already resulted in the existence of an electric power system in the United States which stands out above the systems of the rest of the world in countrywide availability, quality and cost of service. The closing of the gaps that exist in some places will be one of the acts that will assure the maintenance for the United States of that dominant position.

It may still appear that it is much easier to go on your own. That ease, however, is only apparent and the apparent ease definitely becomes a burden when load conditions change, when system outputs begin to decline, when small underloaded plants begin to run up their operating expense, or when system emergencies develop that are totally beyond the range of possible help of improperly located or inadequately protected facilities.

But even if the working out of the interconnecting problem involves difficulties, it still is imperative that we pay more attention to it than we have in the last six or seven years. It is imperative because we must not forget that the principle of interconnection offers these possibilities in a utility system:

Better service, lower cost service, better protected service, and more solidly protected capital investment. Above all, and under all conditions, the satisfaction and the peace of mind that come from a definite knowledge that the utmost that can be done by a progressive art and by the intelligent application of capital has been done to assure a proper discharge of the responsibility assumed in undertaking to render utility service. It is true that a great many difficulties are involved in carrying this out, but, still, it must be admitted that the end sought is worth the effort needed to master all the difficulties. For I take it that nothing less than the complete result enumerated above can or will satisfy a conscientious and progressive management. And conscientious and progressive management has been behind the phenomenal development of the unparalleled electric supply system we have in the United States today and is the only real assurance of the continuance of its further development.

The Electric Industry Re-examined

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customer and not to changes in the rate schedule.

While I may appear to have dealt at length with only three themes, I have, I know, been altogether too brief to do justice to the subjects. What I endeavored to show is that the Federal Trade Commission investigation authorized by the Senate was largely a futile task; that the Commission itself seems to have acknowledged this as discreetly as the amenities of the situation permitted; and competent investigators must also come to this conclusion. But admitting this, the next question is whether the Commission proceeded along sound lines even under the handicaps for which it was not responsible. And to this I answer that the investigation fell far short of the good ends that might have been served. The improvement in quality of service as illustrated in the history of the development of the electric light and power industry shines in contrast with the inefficiency of politics. We seem always to take the longest, roughest, and most destructive road to a desirable end when political action attempts to deal with facts and conditions in the economic realm.

But what I have said today does at least make out a *prima facie* case in support of an investigation into the investigation if the truth is to be told, so far as the truth can be ascertained from the facts at hand. Indeed, it is necessary to explore an area greater than that attempted by the Commission. Halves and fragments of truth will not long be accepted by an intelligent people. "A knowing kind of cattle ain't fooled with mouldy corn" and a knowing kind of people will, if given the opportunity, distinguish the truth from hoary fallacies.

It may be that when all the evidence is in, public ownership will be found preferable to public regulation and private ownership despite absence of evidence pointing to any industry that has treated consumers and investors better. It may also be that investigation shall show that the needs of an increasingly complex society will require public regulation if not public ownership of all the sources of food, clothing, and shelter. But such changes must not be the result of caprice or prejudice but instead must be based on a public opinion formed by an understanding of undisputed principles, if our society is to hold together at all. Those who believe in a future for democracy must believe that the merit in a good idea can prevail without recourse to the devices of insinuation, innuendo, half truth, weazel admissions, or political racketeering.

Primer of Electric Service Costs

OVER a period of several years the Nebraska Power Company has conducted a series of educational courses for employees, under the direction of Roy Page, vice-president and general manager, who himself wrote each lesson in the course.

Late in 1936 the publishing firm of Harper and Brothers requested Mr. Page's permission to publish the lessons in book form, believing that such excellent material would be welcomed by other utilities for use in conducting similar courses among their own employee groups.

The result is an attractive volume—"Primer of Electric Service Costs"—just released by the publishers.

Mr. Page has this to say in the preface to his book, regarding its purpose:

> "If we are to expect the public to understand our business and its problems we must first be sure that we ourselves understand it. It is no less than our duty to first see that everyone in our business is informed."

Costs of providing electric service are defined and the relationship of each to customer's rates is analyzed. It is pointed out that only 20 per cent of the average customer's bill is applicable to the cost of producing electricity, that distribution cost is twice this amount, or 40 per cent, and that the remaining 40 per cent must be allocated to general costs—"customer expenses": meter reading, accounting, collection, bill delivery—and such general expenses as the management, legal services, engineering, and a portion of taxes.

More than 75 per cent of the utility's costs, according to Mr. Page, are "fixed costs"—interest, depreciation, property taxes, maintenance and operation, etc.

A warning of the effect of constantly increasing taxes on public utilities is sounded in Chapter IV in these words: "These continued tax increases can have but one effect on the customer's bill. If they do not actually increase it, they certainly will make it more and more difficult for the utility to make further rate reductions. The investor is already heavily taxed on the wages he receives for the use of his money, so there is only one source from which these taxes can ultimately come, and that is the rate-payer."

With the constantly increasing federal grants to the development of water-power sites such as Tennessee Valley, Bonneville and Grand Coulee, the chapter on "Water-power and its Effect on Utility Costs" is especially appropriate to the times, and Mr. Page has this to say on federal hydro-electric projects: "If these (PWA) plants are economically successful, it will be principally because their power costs will be based on the investment charges of plants built partly with money donated outright by the government and partly with money loaned by the government at very low rates of interest, or will be built entirely at government expense and part of the cost charged to navigation, flood control, etc. In addition, of course, these plants will pay no taxes."

The Wheeler-Rayburn Act and the bitter criticism and equally vigorous defense of utility holding companies which preceded its enactment in 1935, lend point to the chapter on holding companies. Preceding his discussion with the statement that holding company ownership of utilities has existed for about twenty years, Mr. Page goes on to point out that between 1913 and 1936 the national average rate for domestic electric service has been reduced from 8.7 cents per kilowatt hour in 1913 to 5.03 cents in 1936. Mr. Page says further: "Again, the holding company system has made possible the extension of utility service of its associated utilities far beyond the original communities they serve into rural and farm territory."

The last two chapters of the book deal with comparisons of private and municipal rates for utility service and with a thorough discussion of so-called municipal utility "Profits," "Taxless Towns" and "Yard-sticks."

The author, Mr. Roy Page, is Vice-President and General Manager of the Nebraska Power Company of Omaha, with which company he has been associated for nearly twenty years. Prior to that time he was employed by the Southern Pacific Company for nine years in electrical engineering work, and by the Pacific Telephone and Telegraph Company. He is a member of the American Institute of Electrical Engineers, and attended the University of California.

CONVENTIONS AND MEETINGS

JUNE

1	Westinghouse Agent-Jobbers' Association, Hot Springs, Va.
1- 4	EDISON ELECTRIC INSTITUTE, Palmer House, Chicago, Ill.
20-25	American Home Economics Association, Kansas City, Mo.
21-24	Canadian Electrical Association, Banff, Alberta, Can.
21-24	National Association of Cost Accountants, Hot Springs, Va.
24-26	American Society of Heating and Ventilating Engineers, Swampscott, Mass.

SEPTEMBER

27-30	American Gas Association, Cleveland, Ohio.
27-30	Illuminating Engineering Society, Greenbrier Hotel, White Sulphur, W. Va.

OCTOBER

1	American Gas Association, Cleveland, Ohio.
21-23	Indiana Electric Association, French Lick Springs Hotel, French Lick Springs, Ind.

Coffin Award

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T. Compton, President of the Massachusetts Institute of Technology, and Louis H. Egan, President of the Union Electric Light and Power Company of St. Louis.

The Charles A. Coffin Award was established in 1922 by the General Electric Company as a tribute to the late Charles A. Coffin, a founder of that company and one of the great leaders that the industry has produced. The award comprises the Charles A. Coffin gold medal, a certificate, and a check for $1,000 for the use of the winning company's employee's benefit association.

In determining the Award, the judges recognized the all-around progress made by the Consolidated Edison Company in recent years, culminating in its splendid accomplishments for the year 1936.

The company reported rate reductions during the year which are expected to save customers $8,376,600 annually, and is planning to bring about even greater reductions.